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COMPLETE TREATISE  
ON  
Gangrene and Sphacelus;  
WITH  
A NEW METHOD  
OF  
AMPUTATION.

---

By Mr. O'HALLORAN, SURGEON.

---

*Hæc, tam firmis fundamentis superstruere nitentur,  
ut veritates, non quasi in crepusculo micent; sed  
ceu, in medio constitutæ cælo, fulgentibus radiis,  
totam medicorum rempublicam illustrent. HOVIUS.*

*In tenebris lucens.*

\*\*\*\*\*  
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M,DCC,LXV.



COMPLETED

Continued on next page

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APR 1 1991

BY MR. CHAFFIN

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TO HIS EXCELLENCY

FRANCIS Earl of HERTFORD,  
Viscount BEAUCHAMP, Lord CON-  
WAY, Baron of RAGLEY, and Baron  
of KILLULTAGH, of his Majesty's  
Most Honourable PRIVY COUNCIL,  
Knight of the Most Noble ORDER of  
the GARTER, Lord Lieutenant Gene-  
ral, and General Governor of IRELAND.

*May it please your Excellency,*

**O**F all the researches into nature,  
none are so immediately inter-  
esting to mankind as medical ones.  
For the real necessities of life may be  
comprized in a few things: situations  
may render what are highly useful in  
one place, easily dispensed with in an-  
other; but accidents and disorders,  
being what we are every where ex-  
posed to, their relief becomes an ob-  
ject of universal concern.

Amonst the most polite nations of  
antiquity, medical disquisitions were  
held

## DEDICATION.

held in this light: the priests were the dispensers of medicines; and the temples the repositories of physical knowledge. None dared alter the established practice without proper authority; and altars were raised to eminent professors. Solomon, the wisest prince in his days, wrote of plants, from the lofty cedar to the hyssop that creeps on the wall. Mithridates was not less renowned for war and politics, than for medical knowledge. The greatest among the Ægyptian kings cultivated physic, by example, as well as rewards; and Heroes, of the first fame, have delegated their names to particular vegetables. In latter times, physic has met with particular countenance; and our present gracious Sovereign has, with a truly parental care, been minute in his inquiries into the state of his military Hospitals, during the late glorious war.

Incited by these considerations, my  
Lord,





## DEDICATION.

Lord, I have presumed to publish the present work, under your Excellencies auspices, and to request Your patronage of it. Stranger as I am, my Lord, to Your person, though not to the distinguished qualities which have long rendered You so dear to your country, in a private as well as public character, I have flattered myself, that the Importance of the subject will apologize for the liberty of this Address ; and that Your Excellency will graciously accept of the Present, which, through You, I make the Public.

It is, my Lord, an attempt to fix upon permanent and unerring Principles, the methods of treating disorders, in themselves the most melancholy and affecting, and which, by the nature of their service, the military are most exposed to---I mean Mortifications. It is, where no alternative offers between death and recovery, but mutilation, the description  
of

## DEDICATION.

of a method of performing Amputation, repeatedly and successfully practised by me, infinitely preferable to that now in use; the object of inquiry of many ages, and particularly in the present century.

When the author of this Work reflects on the immense difficulties which men of the most established characters in the Philosophical and Medical worlds have met with, in establishing their tenets, and the slowness of their progress, he must be convinced how fruitless any attempt of his, to INNOVATION, must be. Remote from the Capital, and not well known in the world of letters, he easily foresees under what disadvantages, novelties, however well supported, must appear, flowing from his pen. Thus circumstanced, 'tis to your Excellency's justice, 'tis to your humanity he appeals. If the method of treatment here laid down, the result of many years extensive practice and  
pain-

## DEDICATION.

painful observations, shall appear to be founded on irrefragable Principles : If the new method of Amputation be, 1<sup>st</sup>, More expeditious, and less painful in the cure, than that now in use : 2<sup>dly</sup>, If the patient be ever after exempt from these painful sensations subsequent to every other method : 3<sup>dly</sup>, If in the thigh particularly, where it is most wanting, the cure be perfected in half the time now taken, and with infinitely more ease to the sick : If, 4<sup>thly</sup>, in all these cases, the use of the extremity of the stump be preserved to the patient, by the intervention of an artificial limb, will not these be motives sufficient to justify it's general use in the military hospitals of this kingdom ? Stronger I am persuaded it cannot have to make it an object worthy your Excellency's protection.

Deign favourably then, my Lord, to receive this humble tribute of my labors. It is a presage of that universal



## DEDICATION.

verfal applause which a generous and grateful people will exprefs for your Excellency's mild and equitable adminiftration; and forgive the ambitious attempt to fhelter this work under fo diftinguifhed, fo illuftrious a Representative of the Noble House of SEYMOUR.

I have the Honour to fubfcribe myfelf, with the moft profound Refpect,

Your Excellency's moft devoted,

and moft obedient

humble Servant,

SILVESTER O'HALLORAN.

Limeric, Oct. 30, 1765.



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# DEDICATION

With the most sincere and  
cordial regards and respect for your  
kindness and attention to  
this work, and for the noble  
aim which it seeks to achieve,  
I am, Sir, very respectfully,  
Yours truly,  
OLIVER C. CHALLORAN

Please the Honorable to be  
assured with the most profound  
respect,  
Yours truly,  
OLIVER C. CHALLORAN

Very respectfully,  
OLIVER C. CHALLORAN

and  
Yours truly,  
OLIVER C. CHALLORAN

Yours truly,  
OLIVER C. CHALLORAN

OLIVER C. CHALLORAN

March 30, 1863.



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C O N T E N T S.

A P P E N D I X

*Containing Proposals for the advancement of  
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of the antient state of physick amongst us.*

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E R R A T A.

Page 9, l. 7, for quiet read quick; page 41,  
l. 19, after " escaped," add, in a word  
she died, the fifth day from the operation;  
page 147, l. 16, for transeeded read tran-  
suded.







# P R E F A C E.

BEING naturally of a contempla-  
B tive disposition, and strongly in-  
clined to excel in a profession of  
so much use to mankind as Sur-  
gery is, I took early care, to inform my-  
self of whatever had been advanced, either  
new, or curious, on any part of it. To  
make this pursuit more easy and useful to  
myself, I had several manuscripts, in which  
the principal disorders of Surgery were  
classed; and under each article had con-  
tracted whatever had been asserted as new,  
by different writers. I found such as treat-  
ed of gangrene, from Galen almost down  
to the present time, account for its forma-  
tion thus ---- Inflammation has four me-  
thods of termination. 1. By discution.  
2. By abscess. 3. By skirrhous: or, 4. Gan-  
grene. As the cause of gangrene was then  
supposed to proceed from the highest ex-  
cess of inflammation, and the redundant  
a blood

blood and juices becoming putrid, for want of proper assimilation, no wonder then, that amputation should be deemed the only cure for a local complaint. Thus, by admitting a theory, repugnant to experience, in most instances, have conclusions been drawn, highly detrimental to the sick, and to surgery! Noting down the remarks, which I drew from time to time, from experience, on this head, I began to suspect, that the theory of gangrenes was not well founded. In fact, I found a great number of mortifications to be attended with very little degree of inflammation: nay, that the only way to avert or impede their direful effects, was, to endeavor to rouse in the blood and juices themselves, every latent principle of heat and inflammation! Sollicitous to explore the nature of this terrible disorder, through all its different meanders, I omitted no opportunity, nay, amongst the poor sought many, to satisfy so laudable a curiosity. Reiterated experiences have convinced me, that the source of most gangrenes, is really and materially in the blood and juices themselves: of consequence, that what seems to be the real malady, is a symptom only, of that universal depravity, with which the whole mass is replete. Succeeding observations enlarged my ideas on this head, and have enabled



enabled me, I think, with great precision, to distinguish the different species of gangrene.

That, from an universal chachexy, being the source of all the rest, demanded the first place, and particular attention. The proving, to conviction, this species of gangrene, and its different stages, is undoubtedly a considerable acquisition to surgery: it will evince, that the views of a good surgeon must be much more expanded, than what has been supposed; and that the most expert operator, may not be always the best surgeon. By it, it will appear, that, to do justice to the sick, and to ourselves, we must, in many cases, rather avoid, than perform capital operations. In the first volume of the Edinburgh Essays, are some interrogatories proposed, relative to the point in question, which, to this time, have remained unanswered.

That an hot and bilious habit of body disposes parts to gangrene, after violent hurts, where proper and seasonable evacuations have been omitted, cannot be doubted: of this the present work affords some instances; but the reader will observe, that even *here*, I am very reserved, in recommending amputation, till such time as the parts become absolutely sphacelous, and a sensible separation of the



livid from the sound parts appears, least any remains of this disorder be lodged in the blood. My reasons are strong, and should not be transiently flurred over.

The first instance of a cancerous gangrene I met with, and, I think, the only one yet described, I own, made me a little vain. I attributed his speedy and lasting cure, to the pains I first took, in removing the cause from the mass of blood: without such caution, I concluded his recovery impossible. And yet, to prove how fallacious human reasoning is, when opposed to experience, and how open we should ever be to conviction, behold subsequent cases, of the same class, where the symptoms were so aggravated and pressing, as to make the necessary delays of preparing the blood, highly dangerous to the sick, and yet they have also been completely cured! Can any thing more strongly prove the futility of attempting to draw general conclusions, from particular experiments? Can more concise or cogent reasons, be opposed to general systems, either of physic, or philosophy?

That species of gangrene subsequent to phlebotomy, though it must appear new, yet, it seems, is much more common than has been supposed. The first instance I met, made me pay more attention to Dionis's remark on this head: I wished for  
further

further opportunities to investigate the nature of this malady; and my curiosity was effectually satisfied, in the next case. Tho' I am not without my doubts, but that the cause of this disorder, may be resolved into the universal gangrene; yet, as I found it to arise immediately from phlebotomy, I thought it merited a particular chapter; since it will prove, that the accidents attendant on bleeding, are more, and greater, than has been supposed. Since the closing that chapter, I have met with another instance of the fatal effects of bad bleeding, in the case of one Ryan, a country-man, who died the fourth day, from this cause.

The chapter on diseases of the solids, will, I hope, also appear to have some merit. That limbs have been too often condemned in these complaints, thro' the impatience of the surgeon, or patient, or both, which might have been saved, is a fact that cannot be doubted: to attempt distinguishing the curable, from the irremediable disorders of this class, must certainly be highly useful; even the outlines of such a design are laudable.

Though gangrene from intense cold and frost, is a complaint that seldom occurs here; yet, in a maritime country, it deserves particular attention. Winter campaigns, and long voyages, expose both the soldier and sailor to such attacks; and, as it

it demands a peculiar kind of treatment, the exposition of it becomes the more necessary. The method of cure here pointed out, is founded on reason, supported by philosophical experiments, and confirmed by the observations of gentlemen long versed in these disorders.

The method of cure, where the principal arteries are wounded, appears to me extremely rational; and, I think, highly warrantable. The taking up the blood-vessel, removes our present apprehensions; and the greatest necessity only, should countenance the taking off a limb. This chapter appears to me very interesting, and to demand a particular attention.

We observe, that nature performs her operations in the most simple manner, and, left to herself, will do wonders. The rules prescribed by art, to reduce gunshot wounds to simple ones, I have often imagined, were too round about: that a method less painful and dangerous might succeed; and that soft, relaxing, anodyne applications, and warm stuping, might answer the terrifying process of profound incisions, to subjects, from the nature of the accident already too strongly imprest with terror. For the same reason, I have endeavored to mollify the too great attention to extracting foreign bodies, from wounds of this class, by (I apprehend)

proving



proving that nature, with little fatigue or danger, will in a few days, save us a great deal of trouble, and herself some pain, in this process. In a word, the treatment I have proposed for gun-shot wounds, in general, is both a new and safe practice. It cannot be supposed, from my situation, that I should be enabled to illustrate this practice, by a variety of cases; and yet all the proofs necessary, to a mind open to conviction, I think, are here advanced. I judged some strictures on the manner of treating gun-shot wounds, both useful and necessary; more especially as it appears, that cruel operations, in these unhappy accidents, are still but too often practised: I draw this inference from the perusal of M. Belguer's dissertation, as well as other modern essays.

As to amputation itself, that its indiscriminate use, or, indeed, rather abuse, has been of infinitely greater detriment to mankind, than service, I think, must be admitted. We daily hear of sudden accidents, that require amputation; and nothing is more common, than to be informed, that the patient died in two or three hours after the operation. In sea engagements, where a limb is torn and shattered, this very soon follows mutilation; and after battles, the recoveries bare no proportion to the deaths, on this account.

count. It was this great propensity to lopping off limbs, that caused a complaint to be exhibited to Louis the XIVth, that his surgeons estimated the importance of their service in a campaign, from the number of mutilations only; and they were obliged to defend themselves from this aspersion before a prince, who wisely rated the lives of his people too high, to suffer characters to be gained at their expence. In fact, it is not enough for a surgeon to know *How* to operate, he must also know *When* to do it. Now we propose no operation, nor can we suppose a patient would submit to any, without expecting relief by it. But if thousands of instances prove, that in all sudden accidents, which make the loss of a limb absolutely unavoidable, that speedy amputation is mostly followed by death, should it not, in succeeding exigencies, deter us from such practice? It is true, in deplorable cases of this kind, few have the courage to oppose the general torrent. The practice has the sanction of antiquity, supported by modern suffrages. If this essential point is not directly complied with, and the patient dies, the surgeon suffers the reproaches of the friends, and of the public, as ignorant in his profession; whereas, if amputation is performed, all is right, whether the sick lives, or dies.

The

The clearing up this single point alone, is unquestionably of the greatest service to mankind, particularly to the military. By demonstrating *when* this operation ought to be done, we may, to a degree of certainty, assure ourselves of the patient's recovery. It is true, this operation will be, by this means, more rare, but then it will be more successful: the general estimation of recoveries, to deaths, in this single article, is as thirty to an hundred; but, by the principles here laid down, we boldly affirm, because justly, that in an hundred amputations, *ninety-five shall recover*! An acquisition of knowledge, highly honorable to surgery, and acceptable to humanity! Without a complete discussion of this affair, the New Operation would not appear with all the advantages to the public, which it now must.

To abridge the cure, after amputation, has in all ages employed the particular attention of surgeons. To answer this end, Celsus recommended a portion of skin to be preserved, to cover the bare bones: Paree advised the cross suture of the surrounding skin; Verduin and Lowdham, &c. proposed the flap operation; Mr. Cheseldon invented the double incision of the integuments; Mr. Sharp revives the cross suture, of the skin, so often before him applauded and censured; and, in fine,



that Mr. Louis advances, that removing the fillet before sawing the bone, to give the muscles, particularly in the thigh, time to retract, will greatly shorten the cure. However, nothing is more certain, than that this great end, so long and eagerly sought for, has not been gained by these different means proposed ---- To publish then, a method of performing amputation, as expeditious as the present mode, and attended with no more pain to the patient; in which every advantage, so long wished for, is acquired, must assuredly be a present much wanted, and highly acceptable to the public ---- May I say to mankind: Such, undoubtedly, is *Our Method of Amputation*.

But, besides its superior advantages in the leg, to the common one, too much cannot be said in its praise, where the thigh is the object; especially if contrasted to the pain and misery concomitant and subsequent to the usual method. Besides a tedious and painful cure of many months, the patient is ever after subject to these disagreeable sensations, especially in cold weather, attendant on a bare projecting bone; whereas, by our method, the cure is completed in as many weeks, as the other requires months, and all subsequent pains avoided!

But,

But, besides the utilities of this practice, considered as an operation only, the very principles on which it is founded, throws some further lights on surgery, and on the healing art. Inflammation and fever, those bug-bears to surgery, and the natural consequences of every great derangement of the animal oeconomy, so far from being deemed alarming, will be looked upon as good signs: their excess, or absence only, must be judged dangerous: Evacuations will lessen the first; whilst cordials, and generous diet, will promote the latter intention. The advantages of our operation extend still further: they point out the precise time, in which the union of divided parts should be attempted. They prove the futility of trying to unite fresh incised wounds: this should be done, when suppuration becomes established, and not before. On further consideration, the prospect appears still brighter; for though modern writers have minutely described the manner of dissecting cancered breasts, and preserving a large portion of skin, to expedite the cure, yet are they silent on the means of conducting the sore, to this desirable end: so far from it, that it is demonstrable, they have not even conceived a distant idea of it. For M. Faget \* ac-

b 2

knowledges,

\* Mem. de l'Academ. de Chirurgie, T. 1. P. 3.

knowledges, that in six weeks, from an operation of this kind, the fore was not healed; whereas, on our principles, nothing is more certain, than that it must be skinned, at a much earlier period. Thus we see, what extensive inductions may be drawn from sound principles!

The proposal for advancing surgery in Ireland, must certainly be acceptable to the profession: happy for the nation, and the healing art, if the force of arguments advanced in its favor, be properly felt and attended to, by those who have the power and the means of putting this most useful and noble profession, on a more respectable footing. In the most early periods of our history, it appears, that the health of the subject, was a particular object of attention in the state; and were no other monuments of our antiquity left, yet would this alone, in every civilized nation, secure us the character of a polished people. As to the work itself, after mature deliberation, I have thrown it into the form in which it now appears. By dividing it into chapters, they serve as resting places to the reader: the title of each, may induce him to examine it, with some attention; whereas, the whole, thrown into one, might disgust, or tire. The cases illustrating each head, are wrote with a scrupulous regard  
to



to truth. I have aimed at perspicuity and conciseness in the style. Books of surgery, at best, can have little entertaining: the many disorders incident to humanity; and the cruel, though necessary, means of relieving them, must afford, to a contemplative mind, but melancholy ideas; long-winded periods, and ill connected sentences, should be therefore avoided. The divine, and philosopher, being thus insensibly brought in, to study the corporal, as well as mental, defects, will find new and efficacious themes of moralizing, and the public new lessons of morality.

I have, through the course of this great and arduous undertaking, carefully avoided giving forms of medicines, satisfied to point out the capital remedies only, leaving the manner of prescribing, to the judgement of the judicious surgeon. The same reasons that stimulated me, to propose a scheme for the advancement of our surgery, have had their weight here also. These formulæ too often encourage empirics, and ignorant people, to practice, and, by mistaking the indications, to do more harm than good. To make this work thoroughly to answer the title given, I have added an Introduction, containing a sketch of the different sentiments of writers, in all ages, on this malady: by this means, without much trouble, the  
reader

reader will see the many and different attempts made to render this operation more simple, and the cure more expeditious. Besides, it is an act of public justice, to transmit to posterity the names of those, who have endeavoured to be useful to mankind, in their generations, even though the success should fall short of the expectations. In a word, reader, I flatter myself, that this work will not only appear useful to surgery in general, but that men of extensive practice will find in it, profitable instructions to direct them in their private practice. As for those gentlemen, in whom the large vacuities from science are replete with self-sufficiency, it would be too great an indulgence to expect their perusal of this work, however new or curious. If they will even condescend to glance transiently over this preface, before they pronounce judgement on the whole, I shall deem it as a singular favor; and, in return, shall present to them the following saying of Seneca's, with which I close this discourse.

*Puto multos ad sapientiam potuisse pervenire,  
nisi putassent se pervenisse.*

LIMERIC, Jan. 18,

1765.



OH.



## INTRODUCTION.

✱✱✱ F all the disorders, to which hu-  
✱ O ✱ man nature is incident, none is  
✱✱✱ so truly alarming as gangrene;  
nor can any resource be more cruel, than  
what is generally deemed its cure; namely,  
amputation. The first rise of this opera-  
tion, cannot, with any certainty, be traced.  
To affirm, that its invention was the re-  
sult of study and anatomy, would be say-  
ing too much; because it has been de-  
scribed at a time, when surgery was as yet  
rude, and anatomy little cultivated. We  
rather think, that spontaneous separations  
of limbs, at the articulation, in mortifi-  
cations, gave the first hint to surgeons, to  
attempt an artificial one; and this con-  
jecture seems to acquire some degree of  
certainty, when it is known, that many  
of the ancients recommended the excision  
of a limb, to be performed at its arti-  
culation.

Though



Though Hippocrates treats of gangrene and sphacelus, and even recommends, in mortifications, to cut away the rotten parts, and leaves us that famous aphorism, so often re-echoed by surgeons: “ Illi  
“ affectus, qui medicamentis non sanan-  
“ tur, ferro sanantur: qui ferro non  
“ sanantur, igne sanantur; qui igne non  
“ curantur, hos existimare oportet insa-  
“ nabiles:” yet he no where describes, or even hints at cutting off a limb. The earliest writer we can find, who treats expressly of amputation, is Celsus, who flourished in the time of the emperor Tiberius; and though he describes it pretty minutely, and even gives particular directions, to preserve a portion of skin, in order to cover the bone, yet he no where hints at its being a new operation. (1) Nay, from this very circumstance, there is room to think, that this operation, and the very defects of it, were well known, long before this writer’s time; else, why so precise, in this essential point, of guarding against a bare bone? It is true, he makes no provision for, or guards against an hæmorrhagy, during the operation; nor does he mention any methods to master it afterwards:

(1) Lib. 7. Cap. 33.



## INTRODUCTION. xvii

wards: on the contrary, he acknowledges, that many have died in the operation, from this cause. From the whole of Celsus's account of this operation, I am inclined to think, that it had been in practice long before his time; and that the defects of a projecting bone, were sensibly felt by the very old surgeons, as he is so minute in this point. But then, if so, it may be observed, why so silent in other parts of this operation, so essentially necessary to the existence of the patient? Were it a writer of less antiquity and character, who left so mutilated an account of this operation, I should be inclined to think, that he took this account from tradition, or from some eminent surgeon then in being; and not being sufficiently and experimentally acquainted with the subject, might transmit it to us, as he has, in some parts extremely clear, in others, very defective; but on so respectable and eminent a writer, I durst pass no censure.

Galen, who lived a century later than Celsus, makes no mention of amputation, though he writes expressly of gangrene and sphacelus. (2) He only recommends, af-

c

ter

(2) Lib. 2. ad Glauc. &c.

ter Hippocrates, the putrid parts to be cut away. What is more extraordinary, he never once mentions the name of Celsus, who acquired a very great character in his time.

Paulus, of Aegina, whom Dr. Friend places in the seventh century, is the next after Celsus, who treats of amputation.

(3) He relates the manner, in which Leonidas performed it. That he cut the soft parts, in the sound flesh, I think, is clear, though he does not precisely mention it; because he directs a cloath to draw up the flesh, whilst the bone is dividing, for fear of the saws hurting the flesh. To stop a bleeding after the operation, he makes use of a red iron, to fear the parts.

Avicenna, who lived in the 12th century, to avoid pain and bleeding, directs the flesh to be cut, in the mortified parts; and, after the amputation, to apply red irons to the stump, to consume the putrid flesh and bone, until the patient complained of heat and pain (4).

Giudo de Chauiliaco cut the soft parts, between two ligatures; and, after the example of Paulus, recommends a strip of

(2) Lib. 6. Cap. 84.

(4) Tom. 2. Lib. 4.



of linen, to draw up the soft parts, whilst the bone is sawing. The bleeding vessels he stopt by the actual cautery, or boiling oil. John de Vigo, surgeon to pope Julius the second, who wrote in the dawn of the 16th century, recommends a limb to be taken off in the mortified part; and to sear the vessels with red iron (5). Vesalius, who wrote about the middle of that century, describes amputation in a new manner. He directs the flesh to be cut with a red-hot knife, in the gangrened parts; and, after sawing the bone, makes use of the actual cautery, to consume the putrid flesh, as well as to promote a speedy exfoliation of the bone (6).

Bartholæmeus Maggius, cotemporary with Vesalius, cut in the rotten parts, which he afterwards separated from the sound; and, after the operation, applied to the stump the actual cautery, or dipped it in boiling oil, mixed with sulphur, till it penetrated to the quick (7).

Botallus, who was physician to Charles the IXth of France, after describing this operation, after Maggius, observed also, that it was very tedious. He proposed a shorter, and, as he affirmed, a less pain-

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(5) Lib. 4. Cap. 7.

(6) Chir. Mag. Lib. 5. Cap. 12.

(7) De Vulneribus.

ful one (8). It consisted of two long, and very sharp knives, the under one immovable, and fix'd to a piece of wood; the other, placed in a frame, and moveable, by means of a groove, in a machine, to which was fixed a large piece of lead. To take off a limb, with this machine, it rested on the edge of the lower knife, and the moveable one, let suddenly fall on it, the limb was lopped off in the instant. The hint of this machine he very probably took from the Scots manner of decollating state criminals; but he was severely censured by succeeding writers.

Ambrose Paree, first surgeon to three successive kings of France, and cotemporary with Botallus, was the man, who first put the operation of amputation on any tolerable footing. Before him, tho' often described, yet was it rarely performed: and we are told, so much did the dread of hæmorrhagy deter surgeons from attempting this operation, that Albucasis positively refused taking off a man's arm, for this very reason. He inveighs strongly against the use of the actual cautery, as being both a cruel, and an uncertain relief; and at the same time prolonging the time of cure,

cure, by making an exfoliation of the bone necessary. (9) He is the first who orders the soft parts to be cut with a crooked knife; and, in amputations of the leg, the interosseous ligament to be divided, before the bone is sawed. Instead of the cautery, he directs the arteries to be secured by ligature; and, notwithstanding the insinuations of some moderns, that he took this hint from the antients, because they mention the stitching of large wounds; yet it appears to me demonstrable, that he stands single, in this great and useful discovery. What hint could the recommending the uniting the lips of a wound, by ligature, furnish, towards tying large arteries, after the intire excision of a limb? I think, none; but, supposing it could, how came it to escape the notice of so many centuries? After staunching the blood, he directs the skin, surrounding the stump, to be drawn together, by a crucial ligature, in order to prevent a projecting bone. No wonder, if so many curious improvements on this operation, raised the indignation of his coteremporaries. To see a surgeon improve his profession, was nothing; but to pretend,



## xxii INTRODUCTION.

pretend, at the same time, to be able to describe these improvements himself, was what the faculty could not forgive. The physicians, from time immemorial, pretended to be directors in surgery, as well as practitioners in physick. It was *convenient* for them, that surgeons should understand their profession, but then it was their interest, that the public should not think so. Treatises of surgery, were generally written by physicians; and may, perhaps, in some measure, account for their being, in so many essential points, extremely defective. Here was a surgeon, who wrote on what he understood: no wonder then, that it was so clear; and that this bold writer was so ill treated. It was publicly asserted, that he was illiterate and ignorant: that he employed physicians, underhand, to write his treatise, and many eminent surgeons to assist him. But his fame has out-lived malice, and the name of a Gourmelin, who was the echoe of these slanders, is thought of with indignation.

Pigray, who wrote after Paree, describes the operation in the same manner; but where he could not take hold of the artery with the forceps, he thinks the actual

tual cautery should be used. Guillemeau, who was a pupil of the great Paree's, follows his master, in his manner of amputating. But as the patrons of fire, were at this time very powerful, he attempts a medium to please both parties. He says, in all sudden accidents, the ligature is best; but, in tedious cases, where there is any suspicion of the gangrene's remaining, he there recommends the cautery (10).

Fabricius ab Aquapendente, professor of anatomy to the university of Padua, wrote in the beginning of the 17th century. In treating of gangrene, he directs the soft parts to be cut an inch within the mortification; and this he deems so curious an improvement, as to affirm, that he advanced it, before he saw De Vigo's book. And, to make his claim stronger, he directs the application of the cautery, till the patient felt pain; which was an improvement, he says, unthought of before him (11).

Severinus describes amputation much in the manner of Paree, but takes no notice of the ligature of the vessels. He thinks, however, that the outside skin and flesh, should be brought over the bone, as much

(10) Chirurg. p. 520. (11) Chirurg. cap. 96.

much as possible, by means of the cross stitch (12).

Woodall, an ancient English surgeon, instead of a ligature to restrain the blood in the operation, had the artery closely compressed, by a strong hand, and relaxed from time to time, to find out the blood vessels. (13) To master the blood, he used the actual, or potential cautery. This method was called, amputating by the gripe; and we find it in use in serjant Wiseman's time.

Hildanus (14), after a tight ligature of the integuments, to stop the blood, had the limb bound down to a bench. He then cut the soft parts, with a knife, or razor. These were drawn back, by means of a leathern purse, that closed with running strings. The periosteum was then divided, and the bone sawed through. After removing the purse and fillet, the stump was seared with red hot iron. We find, that he also recommends the flesh to be cut with a hot knife, which, at once, answered the double end, of incision, and securing the arteries.

Much about this time it was, that Morell, surgeon of la Charite, invented the

(12) Chirurg. cap. 9.

(13) Woodall's Surgery, fol.

(14) De Gangræna & Sphac. cap. 19, &c.



the tourniquet, for mastering the blood, during the operation. Before this time, a flat tape, drawn very tight, above the part to be taken off, or the gripe of a strong man, were all the precautions used. He first applied thick compresses over the course of the large vessels, and over these a flat, strong tape; by the close twisting of a small stick, this compressed the whole limb, but principally the blood vessels. Some time after, Patin, another French surgeon, invented a particular forceps, to catch the artery in, which, to this day, goes by the name of Valet a Patin. After tying the artery with a firm noose, he pierced it with a needle and thread, below this noose, to prevent its slipping off too soon.

Wiseman, (15) serjant surgeon to Charles the II<sup>d</sup> of England, describes this operation minutely. He first draws back the flesh and skin, then applies the tourniquet; and as he divides the soft parts, an assistant draws them up (an excellent method!) He rejects the split cloth, as useless, in sawing the bone; and seems to prefer the actual, or potential cautery, to the ligature, and approves much of a crucial

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cial ligature of the integuments, to hasten a cure.

Nuck describes the operation in the manner of Paree: is the first who mentions Morell's tourniquet: prefers the cautery, to a ligature of the vessels; and, in many cases, thinks the lycoperdon, or crepitus lupi, may be safely substituted to either.

About this period, Rabel, a German chymist, invented a mixture, which he vaunted as a great secret, to stop all bleedings, and which the French yet, after him, call Eau de Rabel. It was a composition of strong spirits of vitriol, and spirits of wine. By the bare application of this, he affirmed, in every species of bleeding, that the ligature, or cautery, would become useless. He applied to Louis the XIVth, the then patronizer of arts and sciences in Europe. He generously rewarded him for his secret; but, by the report of Dionis, its success was very inadequate to the public expectations: for a soldier of the invalids, whose thigh was taken off, died of the hæmorrhagy, in his hands. Nevertheless, it may be confidently affirmed, from its very composition, to be an excellent styptic (16).

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(16) Cours de operations, &c. par Dionis.

La Charrier treats of the causes of gangrene, and describes amputation with precision. He orders a piece of paste-board, under the gripe-stick, for fear of wrinkling, or hurting, the skin, and advises the fibula to be sawn through, before the tibia, for fear of splintering this bone. He thinks the retraction of the soft parts, by a split cloth, very necessary, to prevent a projecting bone; and prefers the ligature of the vessels to the cautery. He thinks the crucial stitch of the integuments very proper, in the arm, or thigh, to prevent a projecting bone; but condemns it in the leg, or fore arm (17).

Solingen, in a Dutch treatise of surgery, imagines, in taking off a leg, the lower down the division is made, the better; and he contrived a machine, in which the stump was to rest, which, by means of springs, answered the purposes of the mutilated parts. But though this improvement is mentioned by Dionis, and Heister, yet I find him not followed by others, in it (18).

Dionis, a bold and able surgeon, describes this operation minutely. He directs astringent powders, mixed with  
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(17) *Nouvelles operations de Chirurgie*, Chap. 35 and 36.

(18) Vide Heister, Dionis, &c.



glare of eggs, to dress the stump with. He mentions three kinds of ligature for the vessels--- By a ligature slipped over the Valet a Patin---or when the artery cannot be taken hold of, by two convex needles, armed with the same thread, to surround the vessel and circumjacent flesh with; or the same may be done by one large convex needle, well threaded, which, as his ingenuous commentator, M. La Faye, observes, is the present practice (19).

But the greater the experience of surgeons, in amputation, the more sensible they became of the many imperfections this operation labored under. The projecting bone, receiving no advantage by the cross stitch of the integuments, made Mr. Lowdham, an enterprizing English surgeon, propose a method, before unheard of, and which seemed very feasible (20). This consisted, in preserving a flap of flesh, in the posterior part of the leg, of a considerable length, below the part to be taken off, which, covering the stump, promised to make the article of healing extremely expeditious. Upon trial, we find, however, this operation attended with no degree of success. This disappointment

(19) *Cours des operations de Chirurgie.*

(20) *Currus Triumphalis ex Terebinth.*

pointment did not deter M. Verduin, an eminent surgeon of Amsterdam, in some years after, from reviving this method, and illustrating it, in his Dissertation on this subject, by a variety of figures of machines and bands, by him deemed necessary to the success of this method (21); but though Ruyfch and Manget, &c. have been loud in their praises of it, yet I find it condemned by Junkers, Heister, Baron Van Swieten, Mr. Sharp, Mr. Louis, &c. Some time after Mr. Heister informs us, that his friend Koenerdingius, proposed some further improvements on this operation, in a Dutch Treatise, on Gangrene and Sphacelus, but does not mention what they were. (22) Subsequent to these, M. Sabourin, a surgeon of Geneva (who affirmed, he had successfully performed his method at home) proposed to the Paris Academy, to take off limbs, even at the articulation, and, by preserving a flap of flesh, to make a speedy cure. By the interposition of this learned body, he was permitted to perform his method at the Hospital of la Charite, and Messrs du Verney and Mery, were appointed to superintend this operation, and report its success,

(21) Dissert. de Novâ Artuum de currandatione.

(22) Tract. Chir. cap. 35.

success, with their opinions of it. The man died of the hæmorrhagy; and though these gentlemen were reserved enough in their reports, yet it is an incontroverted fact, that this method was never after attempted in France, or elsewhere (23).

La Motte, a surgeon of Valognes, in Normandy, and a most diligent observer, is the first, I find, who treats of, and explains, the nature of gangrene, with satisfaction. Before him, the custom was, wherever a mortification appeared, to attack it with sword and fire, agreeable to the axiom of Hippocrates. He, from his own experience, shews the ill success attending this practice. In lieu of which, he proposes fortifying nature, with antiseptics, and strong cordials, in gangrenes, from internal causes, and to the fore applying styrax, mel ægyptiacum, and warming spirituous dressings, to assist nature in discharging this deliterious load. His method of amputation, I find, was according to the model then in vogue, at the Hotel Dieu of Paris. The artery was closed with a button of vitriol, and the dressings covered with restringent powders (24).

Morell's

(23) Mem. de Acad. des Sciences, 1702.

(24) Traite Complete de Chirurgie, Tom. 3.



Morell's tourniquet, tho' particularly intended to command the large arteries, yet, by its too great compression of the whole limb, was much complained of. An Hungarian surgeon invented one, so contrived, as to press upon the large vessels only. This machine was much improved by surgeon Petit, who, in 1718, presented it to the Academy of Sciences. In 1731, we find a paper of his, on hæmorrhagies, and the different means of mastering them; in which he censures the application of sharp caustic topics, as no way answering the end proposed; and affirms, that this end is effected, by means of a plug filling up the extremity of the artery. Doctor Petit, soon after, gave in a paper, on this same subject, in which he advances, that sharp applications best answer the end of stopping blood. In this Memoir is also contained, a Chronological History of the rise and progress of amputation, to his time, replete with useful remarks: how far this has been assistant to me, in the preceding account, the reader may soon see, by comparing this, with that learned gentleman's paper.

In the Medical Essays of Edinburgh, we find, amongst many valuable papers of professor

professor Monroe, one chiefly calculated, to point out the defects attendant on the operation of amputation. They are many, and curious; and we shall just point out the principal. (25) 1. He recommends a roller, to cover the vessels, instead of a soft compress, and to be sewed to the circular, for fear of its slipping from the exact course of the artery. 2. The bone should never project from the flesh and skin. The periosteum should be cut, as near to the flesh as possible, and pushed up, by the knife, that the saw may act as near as possible to the sound flesh. 3. The artery should have but a small quantity of muscular flesh surrounding it; and the surgeon should advance his needle higher up, than the orifice of the vessel, in making the ligature, lest the artery might escape this noose. His remarks on bandage, and dressing, are very instructing; and every defect he points out, attendant on the common bandaging, only serves to illustrate stronger, the great utilities of our method of dressing.

Mr. Cheseldon observing, that neither the cross suture of the skin, recommended by Paree, nor the flap operation, in any manner answered the ends expected from them,

them, imagined another method, to avoid a projecting bone, and a tedious cure, after amputations. This consisted in two different incisions: in the first, the skin and corpus adiposum only were divided; the divided parts were then to be drawn up, and the incision of the flesh was to be made close to them. By this means, from one to two inches of skin were preserved, to lap over the stump (26).

Garengoet is extremely detailed in this, as, indeed, he is in every other operation of surgery. In taking off the leg, it does not appear, that he divides the soft parts at twice, as Mr. Cheseldon recommends, though, in taking off a thigh, he recommends this practice. He thinks the split cloth, to retract the flesh, may be dispensed with; and, instead of restraining powders, approves only of soft, unformed lint, to dress the stump with: he gives some useful hints about hæmorrhagies: relates Verduin's method of taking off the leg; and laments, that it is not oftener practised in hospitals (27).

Heister first cut the skin and corpus adiposum, with a scalpel, then drawing up the incised parts, cut through the muscles.



muscles, with an amputating knife, and is particular in his directions for sawing the bone. He directs a split cloth, to draw up the flesh, whilst the saw is at work, and takes up the vessels by the ligature, or staunches the blood with buttons of vitriol; but where the artery cannot be come at, he recommends the actual cautery (28).

M. Le Dran has nothing particular from the usual method of taking off limbs, in his course of operations: he, however, describes two different operations for taking off a thigh, with a flap, the one proposed by M. Vermale, surgeon to the Elector Palatine, the other, by M. Ravaton, surgeon to the hospital of Landau; each of which consisted in preserving two flaps of flesh, which, after taking off the bone, united, exactly covered the stump. He is the first, who describes a method of taking off an arm, at its articulation, with the scapula, which operation, we find, his father successfully performed (29).

Mr. Sharp, a pupil worthy Mr. Cheseldon, strongly contends for the delaying amputation, till a sensible separation of the morbid from the sound parts appears;

(28) *Traſtat. Chirurg.*

(29) *Operations de Chirurgie.*

pears; and shews the advantage of the double incision, first proposed by his master. In a subsequent work, he is more detailed in the case of amputations. He talks of a dry gangrene, that occasioned by intense cold, and a species attendant on old age. He doubts of the efficacy of the bark, in stopping mortifications; mentions the flap operation, and justly doubts the successes of it. In order to make a speedy cure, he strongly recommends the cross suture of the skin, so often, before him, canvassed by writers (30).

(31) Baron Van Swieten, in his Commentaries on his master Boerhave, describes a leathern strap, to surround the limb, above the part to be taken off. In this are two loops, through which two bands pass, which are to be drawn tight, by an assistant, previous to the operation, and whilst the bone is sawing, to prevent, as much as possible, a projecting bone; and does not approve of the crucial ligature of the skin, after the operation.

In the Memoirs of the Royal Academy of Surgery, which do so much honor to humanity, and to France, we find many illustrious members, of this body, deeply engaged

(30) Surgery, Critical Enquiry, &c.

(31) Commentar. Vol. 4.

engaged in the subject of amputation. First, M. Morand, describes the virtues of the agaric, in stopping blood, and for which its discoverer, M. Brossard, a surgeon of la Charite, in Berry, was royally rewarded by the king. M. La Faye, proposes some improvements on the manner of extirpating the humerus, which he thinks preferable to the common one, for these reasons. 1. The ligature of the vessels is not made, till the arm is ready to be separated. 2. The flap being preserved in the upper part of the fore, makes supuration easier. 3. The thickness of the flap, and its number of vessels, will make a re-union more speedy.

— Next follows the history of the flap operation, by the same gentleman, in which he proposes some improvements. He prefers Vermale's method of taking off a thigh, to Ravaton's; and attempts to reduce the machinery of Verduin, to greater simplicity. He seems a zealous advocate for this operation, though it does not appear that he ever reduced it to practice. M. Garengoet next appears, with a method of rendering more simple, the operation in question; but as we have, in the body of this work, minutely considered



sidered this curious paper, we must refer our readers thither for further satisfaction. M. Veyret relates the success attending two different resections of a projecting thigh bone, after amputation. M. Louis, surgeon of Sal Petriere, has wrote a very curious paper, on the causes, cure, and means of preventing a projecting thigh - bone, after amputations. To pass over the rest, his means of preventing this disorder, is simple and curious. After dividing the soft parts, which, he imagines, should be done at once, he directs the tape, that guided the knife, to be immediately removed, before the use of the saw, by which means the muscles, freed from the stricture upon them, have liberty to retract; and the bone may be taken off, three fingers breadth higher up, than it would be, without this simple precaution. We find a second paper of this gentleman's, containing remarks on the amputation of the different extremities, replete with curious and useful remarks.

M. Boucher attempts to shew the abuse of amputation in gun-shot wounds, by a long memoir. It appears, that M. Faure has presented a very interesting paper, in which he aims to prove, that in such accidents

cidents as require amputation, the longer the operation is delayed, the more successful will it be; whilst M. Boucher, in a rejoinder, attempts to demonstrate, that under such circumstances, the speedier the operation is done, the better for the patient.

Mr. Warner, in his *Cases of Surgery*, gives nothing new, under the article of amputation. He relates some instances of the success of the agaric, in amputated legs, but doubts its efficacy in the thigh.

Mr. Gooch, a very modern writer, proposes, as an improvement on amputation, instead of the tape, or fillet, to direct the knife, in making the circular incision of the integuments, a thick leather cushion, the side of the blade resting on which, will make the incision exactly even.

In the first volume of the *London Medical Essays*, I find nothing on the subject in hand; but doctor Hunter gives the history of an aneurism of the aorta, with general remarks on this disorder, well worth perusal. In the second volume, we find the amputation of a leg, from an inward gangrene, and the patient recovered, though no bleeding followed the operation. Mr. Kirkland has, with success,  
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made use of bits of sponge to the stump, where suspicions of a re-absorption of matter have appeared, and strongly recommends this practice in similar cases. We find also, a very simple and curious manner of attempting the operation of aneurism described here.

Mr. Rushworth, a surgeon of Northampton, gave the first instances of the efficacy of Jesuits bark, in stopping the progress of gangrene; and this has since acquired so high a character in these effects, as to be deemed an almost infallible remedy. However, in the estimation of Mr. Sharp, and the great doctor Astruc, not with that degree of certainty imagined.

Since the finishing this work, there appeared in London, a pamphlet, under the title of, a Dissertation on the Inutility of the Amputation of Limbs. The original, it seems, was an inaugural dissertation by M. Bilguer, surgeon general to the armies of the king of Prussia. This was translated into French, by M. Tissot, and from this is our English version; the title of which, is not strictly warranted by the original. The whole scheme of this Dissertation, is to condemn the amputation of limbs intirely; but the author attempts to prove too

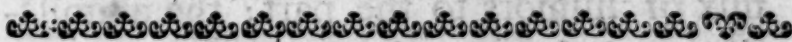


too much: we readily agree with him, that limbs have been often condemned, that, with care, might be well saved; but because this operation has been abused, does it follow, that it is to be totally disused? No body has inveighed more against it, than I; but yet I esteem it, as a sure and valuable, though cruel, means to preserve life. It is true, M. Bilguer acknowledges, that he does not mean his essay as a complete treatise on the subject, and he is certainly right: he is simply content to relate the means he employed to prevent amputation, and for this the public are indebted to him. I have read this pamphlet with great attention, and, after all, cannot find myself under the least necessity to alter any part of the present work: on the contrary, I am, by it, the more convinced of the utility of the present undertaking to the public; which by demonstrating with precision, in what cases amputation is to be attempted, and when to be rejected, at once removes all objections to its use.



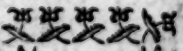


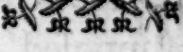
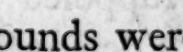


A COMPLETE  
TREATISE  
ON  
GANGRENE  
AND  
SPHACELUS.



CHAP. I.

*Of Gangrene in general, and its different Species.*

I.  HE ancient surgeons, who  
 T  were apt to attribute too much  
 to art, and too little to na-  
 ture, observing that large  
wounds were soon followed by inflamma-  
tion; that this was succeeded by digesti-  
on, or suppuration; that incarnation, or  
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the generation of new flesh, was the result of this process; and, in fine, that cicatrization, or the skinning of the fore, completed their work-----they carefully adapted their medicines to these gradations of healing, and, by this means, confounded the effects of nature with the imaginary ones of their own applications. The consequences of this false theory were, that the healing of sores became a tedious and painful process; and the cure of ulcers the work of years!

II. For, pain being the immediate consequence of every solution of continuity, must necessarily draw on its concomitant inflammation. This determines a greater flux of humors to the part; the assimilation and fermentation of these humors form pus, and the discharge of this carries off the inflammation. Incarnation must then necessarily follow, as the inflammation which, during its existence, opposed this operation (though absolutely necessary to produce the effect) is near over; and cicatrization is what completes the whole. Thus then what has been supposed the work of art only, appears to demonstrate the efforts of nature; and of the truth of





of this some of the first surgeons in *Europe* are so well satisfied, as to find a little scraped lint alone answer every state of a wound better than this pompous farrago of medicines. And that no doubt should remain on this head, observe the cure of a fractured bone: the surgeon does his duty well by bringing the separated parts into mutual contact, and so retaining them by proper bandage. Every thing else is the work of nature. Is not the same thing every day exemplified in trepanning, as well as after large exfoliations? The divided ends of a bone will form a boney concretion only; separated muscles but carneous fibres; and divided skin but a new cicatrice. How then can any single application answer these different ends? It is on this account that dry lint, by absorbing lightly the discharges, best answers nature's intent; and, that when suppuration lessens, the seldomer a sore is opened the sooner will it heal, since the very discharges are the most sovereign balsams.

III. But if the blood, juices, or habit are vitiated, it is certain the discharges cannot be benign. And here the absurdity of our boasted applications will become more con-

spicuous; since, in spite of them, the sore will every day degenerate from bad to worse. In this case, 'till the juices become corrected, and the habit mended, the most, and best we can do, is, to temporize. As I find that surgeons have been very far from being sufficiently explicit in an affair of so much consequence to mankind, and that I flatter myself (having long studied the subject) that I shall be able to throw this whole matter into a clearer light, I shall distinguish the different species of mortifications under proper heads, such as I have experimentally found them; illustrating each division by precept and example.

IV. Mortification or gangrene may proceed from external injuries as well as internal maladies. The internal causes are, 1. An highly vitiated disposition both of solids and fluids; on which account, the slightest hurt brings on pain, inflammation, gangrene, sphacelus, and finally death. In vain in this case are profound incisions, amputation, &c. made use of. These will never stop the course of a disorder materially in the blood and juices. This species of gangrene, when we come to treat more  
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particularly of, must suffer subdivisions.

2. The next state of blood which may produce a gangrene, is an hot, bilious, and highly inflammatory one. The parts are endued with a great degree of sensibility; and a slight hurt will often bring on the most alarming symptoms.

3. Where there is an oscitancy and grossness of humors, and no great degree of activity in the blood itself, and a wound or hurt supervenes, the blood and juices have not activity enough to throw a degree of inflammation sufficient to form pus on the lesed parts; nor often, by the assistance of art, sufficient to discuss.----The humor, like a torpedo, gradually benumbs, 'till the scene closes in a deadly sleep.

4. A cancerous disposition of the juices often brings on a most terrifying species of gangrene. In this, from a wart hurt, a slight itching, &c. will a sharp humour form, which will gradually consume muscles, ligaments, blood vessels and bones; nor will it cease its advances 'till the lesed parts are finally severed from the body.

5. There is another kind of gangrene which seems to have its seat in the solids, and is a kind of endemic disorder to the poor of this country:



6      *Of Gangrene in general, &c.*

try: whether this proceeds from their extreme poverty in this land, flowing with milk and honey; or, their often working whole days in marshy grounds, I shall not affirm; but certain it is, that an anchilosis and caries of the bones of the tarsus, coming with or without hurt, is a very general complaint here.

V. The external causes of gangrene are numerous and obvious, and will be particularly considered where they require different treatment. 1. These arising from cold, and intense frost, require a cure peculiar to their state. 2. These from gunshot wounds, compound fractures, and all the numerous train of unhappy accidents which necessarily require amputation, demand only temporizing with for a time; and, as all the different symptoms that can possibly occur during this period will be fully treated in other parts of this work, to avoid prolixity, the reader is referred to them. But one point of the greatest consequence to mankind, and what, if properly attended to, will, I am persuaded, be the means of saving numbers of lives, shall be clearly settled; namely, whether in such external accidents, as necessarily require  
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amputation, it be safest to perform the operation on the spot, or wait for some days?

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C H A P. II.

*Of Gangrene and Sphacelus proceeding from an universal Cachexy, or both Solids and Fluids vitiated.*

VI. **W**HEN a sore or hurt, seemingly of a trifling nature, and in which no capital branch of a nerve or blood vessel is hurt, or tendon engaged, instead of having the regular progressions towards a cure, already described (No. 1, 2.) it discharges a thin sanies, or bloody ichor, degenerates from bad to worse, brings on gangrene, sphacelus, convulsions and death: we must certainly attribute these symptoms to a more remote cause. It must be the blood and juices themselves which, instead of balsamic, secrete these deliterious discharges. In such cases what does mutilation avail? If a slight sore on the hand or leg, for instance, should shortly bring on a mortification of these parts, will amputation stop it? Undoubtedly no! For if such insignificant

ficant hurts bring on these fatal symptoms, sure increasing their surface, or giving a greater scope to the vitiated juices to discharge from their confinement, must, instead of lessening, increase the mischief, which is found constantly the case. In the 22d article of the first volume of the *Edinburgh Medical Essays*, you have the case of a painful tumor of the leg, which, by laying open grew infinitely worse; in endeavouring to remedy this by a more liberal use of the knife, the symptoms gained ground, which, by further perseverance, killed the patient without the assistance of amputation. In the same article, you have a similar case laid open; but as the patient would not suffer amputation (nor, I suppose, further incisions) his surgeon and he separated, heartily tired of each other. You have, in the fifth case of *Le Dran's Observations*, the history of a disorder which took its rise from a pain in the jaw, and every incision or operation only gave greater scope to this leaven to spread, 'till he died a shocking spectacle.

Obs. 1. A case similar to this happened in our Hospital, where a violent pain in the maxillary sinus determined a tooth to be



be drawn. Pus was formed, which was eagerly pursued and discharged. Deterfive injections were ordered; but the pain and swelling increasing, further manœuvres were intended. I was, however, consulted; the tumor had reached the orbit; her pulses were extremely quiet, and the eye distorted, and without sight. I convinced this person his plan was wrong; put the woman under a slow course of mercury, and the woods with bark, though near five months with child. The tumor of the orbit and jaw gradually subsided; her sight returned by degrees, and she has since continued well. Mistaking the symptoms for the cause of this woman's complaints, had like to prove as fatal to her, and her burthen, as the preceding case.

7. In the third tome of *La Motte's Surgery*, case 298, is the treatment of a mortified coccx, from an internal cause. The more he cut the further the disorder spread, till in some days she died a miserable object. His reflections from this, and, as he says, from other cases treated in a similar manner, and with like success, are extremely just; and taught this excellent practitioner

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and observer a more rational and successful method of cure.

VIII. Be it then an axiom in surgery, that in all painful tumors, hurts or sores, in which no principal parts are engaged; which degenerate from bad to worse, without any visible cause, that the knife is the worst resource you can go to, since it never answers any end, but that of destroying the poor efforts of nature, and hurrying the sick to his grave! We must, however, from this general rule exempt cancerous cases, as will be shewn in its proper place.

IX. But because experience is always consonant to solid reason, we shall from theory prove the justness of this practice. Oppressed nature has various ways of throwing off what offends her. In plethoric habits it will be ejected by inflammation and abscess; in others, by scirrhus; and, where the humors become more active, cancer. In the present case, the universal depravity of the blood and juices may be thrown on one particular part. But, as in the inflammatory state, no one would use the knife till the abscess was formed, so here the peccant matter should, by warm stimulants, antiseptics, cordials and poultices,  
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be invited to deposit all her malignity: nay, a very sensible separation of the morbid from the sound parts should ever precede the use of the knife; otherwise nature's endeavours to throw off the malignity would be frustrated. For by hastily taking off the limb, before the infection is entirely lodged there, demonstrably, not only cannot give relief, much less cure the patient, but must also give a higher degree of activity to the remains of this leaven, as nature is now less able to combat it.

X. This state of the blood and juices being solidly proved, we shall distinguish it by four different classes.

Class the first. The solids and fluids are so exaltedly vitiated, that all attempts of art to restrain their progress are useless: like a cataract, or mountain flood, they only increase by resistance, and at once hurry the poor carcass to the grave.

Class the second. Though the habit of body be greatly vitiated, yet not in so high a degree, as in the preceding case. In this situation, by strong stimulants, cordials, temporizing and patience, nature may throw the general vice to some particular part or parts; and thus, by the loss of it,



or them, relieve herself from this universal cachexy.

Class the third. Supposes a less degree of malignity than in the above stages; therefore, by patiently pursuing the same plan, the habit may be intirely disengaged, without loss of limb.

Class the fourth. In this state, though the blood is not highly vitiated, yet, thro' defect of its balsamic, bituminous, or cohering parts, all sores, or solutions of continuity are, with great difficulty, and by length of time only, healed. As these divisions are extremely interesting, by explaining, in the clearest manner, the different periods of this species of gangrene, we shall allot a particular chapter for each class.

TO EDWARD SMYTH, M. D.

Of the *King and Queen's College of Physicians, Dublin.*

The following Chapters on the *Universal Gangrene* are humbly inscribed by the AUTHOR, as a respectful acknowledgment of his most eminent abilities and station.

C H A P. III.

*Of the Esthiomene, first Class, or highest Degree of Vices in the Solids and Fluids.*

XI. **W**RITERS distinguish three stages of mortification. The gangrene, or tendency to mortification, which often gives way to remedies. The sphacelus, or complete mortification, which can only be remedied by amputation. The esthiomene, where not only the part is deprived of all sentiment and circulation, which may be known by the profoundest incisions, yielding no blood; but also the blood and animal spirits are highly affected, and which rarely admit of a cure. Of this last is our present inquiry.

Obs. 2. The child of a shopkeeper of  
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this city, a girl, between five and six, of a remarkable floridness, and fullness of the face, had, when she was about two years old, several biles broke out on her head, neck and chest, which continued for about four months, when she seemed to recover strength and constitution; was, in the month of *November*, 1756, seized with a smart fever, which seemed to precede the small-pox, it being, at that time, rise in town. Her mother had her blooded the morning after the attack, being the 8th of said month, in the arm. The orifice seemed small, and the vein not well cut; at least her mother assured me that, with difficulty, they could get half a tea-cup-full of blood from her. Early next morning the garter seemed bloody, as well as her shift, and the sheets. Upon opening the part, the orifice had an indifferent aspect, and a thin, bloody sanies dribbled down the arm, which they endeavoured to stop with scraped lint, cobweb, and a variety of things. Finding nothing answer, they sent for me. I found the orifice open, the lips discoloured, without any sign of healing. On examining the arm, I could find no tension or inflammation



tion of the biceps, nor sign of an aneurism, or any thing that could make me suspect it, the consequence of the operation. As I had attended the child in her former sickness, and knew her to be of a bad habit of body, I concluded this was the consequence of a total dissolution of the crasis of the blood (which I was confirmed in by several black spots that appeared on several parts of her body, some as big as a silver six-pence) and that she would certainly die. In vain did I use fine lint, soft compresses above and below the orifice, lycoperdon, agarick. Anon, flour, and white of an egg, which, by its adhesive quality, might keep the lips of the wound closed; or, at least, so as to hinder any more of this sanies from escaping. The prodigious thinness of the blood, and the little disposition of the parts to unite, proved an insurmountable obstacle! I attempted to try what success internals would produce. She took, for her drink, a decoction of rose-leaves, with the sp. vitrioli, sweetened with fine sugar, as also the bark, with alex. vitrioli. The dribbling was not lessened that nor the next day; and a total mortification in a manner appeared.

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I requested Dr. *Martin* to visit her that night, the case being so extraordinary; but he was, in a manner, afraid to look at her.---We desired, that as soon as the child died she should be immediately covered with cloaths, wet in spirits, for fear of any infection, and then coffined and buried; all which was done before next morning, she dying that night.

Obs. 3. A young gentleman of about eighteen, seemingly of a healthy constitution, but remarkably pale-complexioned, not having, since a child, any complaint that I could hear of, except a slight sore in his leg, was, about the latter end of *April*, 1759, seized with a pain in the neck, being then in the country. This was treated, for some days, with such maturative poultices as are, on such occasions, usual; and, on his coming to town, Dr. *Clampet*, a very ingenious physician of this city (lately deceased) was sent for, to treat him for a lax, which it seems had accompanied this tumor. But the remarkable fetor in his stools, and the little progress the tumor made, caused the doctor to suspect that the matter determined for this tumor might be re-absorbed into the mass  
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of blood ; and, therefore, if there was any fluctuation, he judged the speedier issue it had the better; without waiting for maturity. To determine this matter I was sent for, *May* 16th ; and though I readily agreed that some sort of pus was lodged there, yet it lay so deep that I deemed it very dangerous to attempt it for a few days more. For this tumor was rather flat than elevated, and extended in the integuments, in the middle and left side of the neck, and of a dusky color, seeming to have little of pain or inflammation. He had besides a great thirst, and an amazing quickness in his pulse; infomuch, that it might be safely affirmed that they beat above an hundred times in a minute. Not satisfied with this, the Doctor desired another physician should be called in, to determine if such delay was consistent with the patient's safety. Accordingly *Dr. Martin* was sent for ; and it was, on consultation agreed, that, for a couple of days more, the strongest maturative poultices and stupes should be used, the speedier to invite nature to this outlet. However, the effects very little answered our expectations. Things being thus circumstanced, on the morning of the



18th, in the presence of these gentlemen, I made such an aperture with my abscess lancet as I thought the patient's safety, and the depth of the matter required: but no pus followed! The incised parts looked very thick, and of a very ugly color. Satisfied, however, that pus was there, I first introduced my probe, and then my finger, in order to direct me to the incised part, which was presently succeeded by my lancet, and immediately near half a pint of a pus, in color and consistence like milk, and of no smell, burst forth. The wound was dressed with dry lint and plaister; and, as the parts seemed so sluggish, I had a poultice of oatmeal, stale beer, and Venice treacle applied very hot over the whole; and these gentlemen ordered what they judged most necessary to answer these intentions. The poultice was again repeated that night; and, upon opening it next morning, a large quantity of a bloody ichor came from it, and the density of the teguments opened, seemed to increase, and become worse colored than the preceding day. We had the sore well stuped, and I dressed it with hot oil of turpentine, plaister, and the poultice as before. That night it was again  
stuped,

stuped, dressed and poulticed, and his pulse seemed much more moderate and regular, without the least intermission. About four next morning I was suddenly called out of bed to see him, and presently after followed by Dr. *Martin*. We found his face swelled at the other side, and, on taking off the dressings, from the anterior edge of the sore, under his chin, and part of his chest completely sphacelated with numbers of phlestinæ; and, in spite of all our endeavours, he died at seven o'clock that morning, preserving his intellects to the very point of dissolution!

Obs. 4. A cooper, aged about 40, who had been in *May* severely attacked by a fever, which was succeeded by a lax, that continued about three months, and reduced him very low; was, in the middle of *October*, 1759, seized with a violent pain in an upper jaw-tooth, as he imagined; to relieve which he applied to an apothecary in this town, by whom the tooth was drawn with very little difficulty. Immediately after which, a large discharge of blood followed, and he caused him to wash his mouth with brandy. That night the jaw and face began to swell, and this swelling

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ing increased considerably by morning, when I was requested to visit him. I found a very disagreeable smell from the parts, the jaw greatly tumified; discolored inside, and a tumor forming towards the glottis. As he was low, I ordered some glasses of claret, generous broths, and a strong decoction of the cortex to take inwardly; with parts of which, tincture of myrrh, and Venice treacle he washed his mouth often in the day. A strong poultice of oatmeal and stale beer was applied externally to the jaw, and down towards the throat.----Towards night the tumor increased surprisingly, with a fœtor, and difficulty of swallowing; and, in spite to the best applications, he died next morning; so exaltedly corrupt was the whole habit of body!

Obs. 5. *Cabill*, a butcher of this city, aged about 50, pale faced, and always a good deal bloated, had been subject, for above 20 years, to a partial dysuria at times, which was always relieved by a discharge of pure blood, as I was assured; and he would continue well for two or three months. But, upon any colds, he again relapsed, and was in some days relieved by  
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his usual hæmorrhagy. I could not find that he ever discharged any gravel, or sandy matter before, or when the fit grew easier; but there was generally a good deal of a glary, gelatinous matter at the bottom of his urine; such as I have often seen when the bladder was no way affected; and which I have also observed, where there has been strong reasons to suspect an ulcer of the bladder. This was the most exact account I could get of his former complaint. In about the middle of *January*, 1760, his disorder returned: his urine came away by small quantities, seldom exceeding three or four ounces, and with great pain. He waited for some time for his usual relief, but with no success. *February* 10, he had a complete retention, with great pain, in the bladder, and next morning he sent for a physician. He prudently ordered a bath of the relaxing kind, with what else he thought necessary, but to little effect, the man complaining grievously of a pain in his bladder.

At four that afternoon, I was sent for to pass the catheter; but, on examination, found the yard surprisngly swelled and large, as to make any attempt of passing the

the instrument impossible. It was also discolored, and a black, watery blister covered it. This I immediately cut, and, after the discharge of the water, scarified pretty deep, but no appearance of blood or sentiment. 'Till such times as stupes could be prepared, I had the parts wrapped up with warm brandy cloths. These were prepared from the common, bitter herbs, with *rad. bellebor. alb., enul. camp., gentian,* and *sal ammoniac*. The parts after stuping were to be frequently daubed with a mixture of *sp. vin. campb., sp. sal. ammon., volat.,* and *mel. ægyptiac*. He also took half a drachm of powdered cortex, every half hour, in a glass of claret. His pulse was regular, but low, and his extremities were very cold, but his intellects strong. I recommended this time to him to use, towards the great end of his salvation, and settling his worldly affairs; and not to discourage him, hinted that this peace of mind might give these medicines a favourable effect. I returned at half an hour past six, and found the sphacelus had reached beyond the root of the penis. This I had immediately wrapped up in a composition of *styrax,* and *gum. galban.* melted

ed and softened with oil of turpentine, and the stupes to be continued round the region of the bladder. But notwithstanding all endeavours, he lost his speech in half an hour, and expired before eight o'clock. In the morning he had no swelling in his yard, and it was not before twelve o'clock, that it began to appear; it became completely sphacelated by six, and he died as above. I was very fond to open him to see the cause of his disorder, which I offered to do gratis, with all the expressions I thought most likely to prevail; but they would not consent to it. However, from the whole, we may reasonably infer, that his disorder was a malignant ulcer in the bladder, near its neck, the most likely place to pitch upon, on account of the many glandular substances thereabouts, as well as the considerable blood vessels, subservient to their nourishment; some of which might probably become eroded by the acrimony of the humor; and so when upon irritation the parts become inflamed (which cold would certainly do) the discharge of blood, which ever comes most to a pained part, gave immediate relief by, for the present lightening the part. This case



ease might probably give time to the extremities of the vessels to unite, as nature is wonderful in her efforts; which being tender would soon burst open again, upon any new access of pain; and all this we see exemplified in manifest ulcers every day. Now, though the bleeding for the present might give ease, yet constant evacuations of a fluid, with which our very existence is so closely connected, must weaken the crasis of the whole mass; make it thinner, less nourishing, colder, and more exposed to forward any bad dispositions in the solids. And it is highly probable, and upon dissection, I believe, it would appear that the bladder had been in a corrupt, mortified state, for a good while, before it appeared externally!

XII. It may be asked, what would give this man a chance for life? In my opinion, his cure should be attempted some years before his death, which, probably, relaxing baths, softening balsamic injections, the sweetening woods, with millepedes, for a time; and, afterwards, a milk diet, with vegetables, and light, nourishing broths, might if not totally effect, at least soften the violence of, the disorder, and make life more  
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comfortable and lasting. These reflections I could not refuse making, as I deem them useful; and that I am persuaded numbers are attacked with disorders of the bladder, occasioned by too frequent use of violent purges, and which are, upon growing violenter, imputed to pocky taints. The miserable wretch is hurried into a course of mercury: he seems easier for a time, because the evacuation of the juices of his body leaves a kind of manity behind. As his strength returns, so do his complaints, 'till at length he falls a sacrifice to ignorance; becomes useless in his generation; and posterity are robbed of the fruits of his body.

Obs. 6. A clergyman of great learning, of a middle age, and tolerable constitution to appearance, in *April*, 1763, at dinner at a gentleman's house some distance from this town, cut one side of his middle finger very slightly. A bit of rag was, on the spot, tied round it, and no further notice taken. Next day he complained a good deal, and seemed a little comatous. The third day, which was *Sunday*, he seemed very heavy, spoke at times very incoherently, and as if raving. The finger and

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hand had a dusky, red swelling, and a small streak of red run up the inside of his fore arm. Next day he was bled, and poultices applied to the part, but with no advantage. The swelling had reached the fore arm; and the red streak the shoulder. Perceiving him so much worse, they requested he would send for a surgeon, which he would not hear to, the accident appearing so trifling. However, finding on *Tuesday* that he slept little, and raved almost the whole night; that his hand became black; and that the swelling had reached his shoulder, they insisted on a surgeon's being sent for, and he pitched on me *only*. The evening of that day I arrived. I found the entire hand, and half the fore arm completely sphacelated, and discolored even to the elbow; the arm to the shoulder greatly swelled, but of a dusky, red color, and received the preceding account.----I had the bitter herbs immediately boiled with lees of wine, and a good deal of *sal. ammoniac*, to stupe from the shoulder to the elbow, making little account of the rest; and to make the revulsion to the part the stronger, made several profound incisions in the arm, which I dressed with dossills dipt in  
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a mixture of *mel. ægyptiac*, *sp. rorismar.*, and *sp. sal. ammon.*, and covered the parts with a poultice of oatmeal, stale beer and whisky, mixed. I gave him inwardly the *cortex peruvian.* in powder, strong port whey, and, to help to disengage the head, had the feet bathed in pickle, and cabbage leaves applied to the soles of the feet. Next morning I found little signs of amendment: the hand was in a manner cold; the fore arm full of phlebotinæ; and the arm of an ugly color.----The stupes, incisions, dressings and poultices as above were repeated----he still raved; but, at the same time, when spoke to no one made clearer answers on every subject.----In the evening the same applications were again used, with strong broths at times, and sinapisms applied to the soles of the feet.----His pulse still quick, as when I first arrived, but no kind of intermission. In a word, he died the next day in spite to all our endeavours. But what I thought worthy of remark was, that two or three hours before his dissolution, the arm, and even the fore arm, looked surprisingly better; but, early that morning, the pulse gave the first alarm, with which I then ac-

quainted the family, and so exactly as to predict almost the very moment of his dissolution. Many were of opinion that I should at first have taken off the arm; but acting on unerring principles, I did not much attend to invidious censure.

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#### C H A P. IV.

*Of the Sphacelus; or, second Species of Universal Gangrene.*

XIII. **A**FTER dismissing the last chapter, in which we were little more than witnesses of the fatal ravages of malignity, without being able to form any possible method of extricating nature, we now come to a more agreeable subject: where nature, properly assisted by art, will be enabled to throw off the peccant matter from the nobler parts to the extremities hurt.

XIV. We have already sufficiently inculcated the necessity there is to avoid amputations, or considerable operations in fores that daily degenerate from bad to worse, without any sensible cause.---The topical applications, in such cases, are, generally  
 stupes,

stupés, embrocations, dressings to the parts and poultices. The stupes may be collected, according to the indications from the following---*summitata absinthii communis, centaureæ minoris, roris marinæ, lavindulæ*---*florès chamomæli, sambuci, ballanist., rad. bryoniæ, enulæ campan., belleboris albi*---*fol. nicotian., sal. ammon. marin*---out of some of which stupes may be made by boiling on water; to which may be added lees of wine, soap ashes, brandy, first run of whisky, &c. with such like let the parts be stuped extremely hot, and often in the day. After which an embrocation may be prepared from some of the following, with which the parts may be fomented, e. g. *Sp. vini camphor., sal. sp. ammoniac., volatil., mel. ægyptiac., lenim. volatile, lenim, sapon. &c.*---The sore, or sores, if any, should be dressed with some animating digestive, in which is *ol. terebinthin. junepери, &c.* warm. La Motte, and others, and even Astruc (*Maladies des Femmes*, tom. 3.) recommend, on these occasions, caustic applications; but as our intentions must be to invite the malignity from the blood to this part, it is manifest such applications will rather prevent this effect. It is, therefore, with great justice,



justice, that we prefer warm digestives to such applications.---Poultices of the heating kind should, on these occasions, be never forgot---such are cataplasms of oatmeal, and strong beer, boiled together, to which may be added Venice treacle, and the cummin seeds in powder; or a poultice may be made of coriander and cummin seeds powdered, and boiled with strong beer, brandy, whisky, &c. *Astruc*, and many modern *French*, highly extol a poultice made of foot, myrrh, and *sal ammoniac* in powder, mixed up with honey, and sometimes a little *mel. ægyptiac*.

XV. Whilst these stimulating and warming applications are inviting the malignity to the surface, inward medicines should not be forgot. The Jesuits bark has been cried up as a sovereign remedy in these cases in *England*, for above 50 Years; though Mr. *Sharp*, in his Critical Inquiry into the present state of surgery, as well as Dr. *Astruc*, in the above work, seem to doubt much of its efficacy in these cases. As for me, I must own, that in many cases, where I found it necessary, the stomach rejected it, and yet they have often done well; and in others the quantity taken was too small

small to attribute any sensible alteration to it. However, we know it to be a good medicine, and a great strengthner, where the stomach will bear it, and, as such ought not to be omitted. Other medicines, of the cordial kind, should not be forgot; which these, who have more faith in fiery, distilled waters, indigestible powders, electuaries, &c. than I, may order at discretion. For my part, I am careful to support my patient with strong, and seasoned broths, fresh eggs, a glass of claret, port wine whey, &c. These are my cordials, and will be found, by experience, preferable to the filthy, and poisonous slops of the shops.

XVI. Having thus established a general method of cure in these melancholy cases, which is drawn from experience, and from the same principles, by which we endeavour to promote suppuration in large abscesses; that is, by throwing off the peccant, and deliterious principles, from the noble parts, we shall endeavour to describe such states of this universal gangrene as necessarily require amputation.

XVII. Though profound incisions about the parts be sometimes an excellent stimulus,

lus, with the other helps mentioned (XIII.) in order, by this irritation, to invite the malignity to the parts, by giving to the blood, a sufficient degree of activity; yet it is demonstrable, that excision, or taking off the limb, should be carefully avoided, as we value the patient's safety. Nevertheless, as we know, there are certain cases, in which life cannot be preserved, without taking off the limb, we must here observe, that, when the malignity is intirely deposited on a part, the leg, for instance; that the mortified parts seem cold, livid and senseless; that the dead parts begin, not only to separate from the sound, but that a laudable supuration becomes established from these last---not only this; but 'till it shall appear that the pulse is well established, the appetite restored, and health pretty well confirmed, should not the limb be taken off. In a word, *'till it shall appear, in the clearest manner, absolutely impossible to preserve or restore the limb, should amputation be deferred.* Some, I know, may imagine, that the proximity of the mortified flesh may infect the blood and juices again, and that so great a delay, as I mention,



tion, may be highly dangerous. But what nature left to herself, in similar cases does, we should follow. Now we know, that she herself has effected an intire separation of the mortified parts from the sound. To this effect, *La Motte*, in the 3d tome of his *Surgery*, tells us of a poor woman, in a most deplorable situation, from a complete sphacelus of the intire leg; but which she would not suffer to be taken off. Despairing of her recovery he quitted her; but, in some time after, learned, that nature performed a complete separation of this leg from the body, at the articulation of the knee, and the woman recovered!

Obs. 7. The case of a family at *Wattisham*, as published in all the *English* papers, by Dr. *Wollaston*, is a strong proof of what is here advanced. John *Dowling*, a poor, labouring man, had a wife, and six children; the eldest, a girl of fifteen, the youngest about four months. They were all, about the middle of *January*, 1762, seized with violent pains in one, or both legs. In about five days, the legs became blue, and covered with black spots. The mortification became gradually formed, and nature began to separate the livid from

the sound flesh. In *April* following their cases stood thus:

*Mary*, the mother, aged 40, had lost the right foot at the ankle; the left foot was also separated, and the bones of the leg were almost dry, with a little putrid flesh adhering in some places. The flesh is found to about two inches below the knee; and the bones would have been there sawn off, but she would not consent to it.

*Mary*, aged 15, both legs off below the knees.

*Elizabeth*, aged 13, both legs off below the knees.

*Sarah*, aged 10, one foot off at the ankle; the other foot was affected, but not so highly, and is now again sound.

*Robert*, aged 8, both legs off below the knee.

*Edward*, aged 4, both feet off.

An infant, 4 months old, dead.

It is remarkable, that, during all the time of this misfortune, the whole family are said to have appeared in other respects well; eat heartily, and slept well, when the violence of the pain began to abate.

The mother is now emaciated, and has very little use of her hands. The eldest girl

girl has a superficial ulcer in one thigh, and seems also ill. The rest of the family are pretty well; the stumps of some of them perfectly healed. Thus far the public advertisement of Dr. *Wollaston* to promote a collection for this unhappy, poor family.

Obs. 8. The child of one G---, a dyer, of *Limerick*, now five years old, at the age of twenty months was seized with the measles, which was succeeded by a fever, that continued about a fortnight. His recovery was but slow; and, during this period, without any previous signs, in the space of twenty-four hours, both fore arms at the wrists, and both legs at the ankles, became completely black, horny, and mortified. The nurse applied, the morning of the discovery, and again at night, poultices of warm cow-dung; and, upon opening them the next day (as the mother affirmed to me) the parts looked as well as ever; nor could the least discolored traces be found. They, nevertheless, the following day, became again black, horny and weak, with very little pain. The above poultice was constantly applied, morning and night, for thirteen days more; at the end of which time, both hands, at the



*carpus*, were found in the morning poultice separated from the body, without pain, inflammation, or hæmorrhagy! A thick, black, and almost impenetrable buff, at the same time, separated from both legs, so as to leave the bones in a manner bare. In due time a new skin was formed: the legs are firm and strong, but the cicatrices deep and very visible. The ends of the *cubitus* and *radius* are covered by a firm cicatrice; but in the right there is a considerable tumor near the *olecrane processus* of the *cubitus*, which is, nevertheless, quite free from pain, or uneasy sensation. This child, notwithstanding these extraordinary accidents, is as wholesome and fine looking a boy as need be seen.

Obs. 9. ----- *Murphy*, a lad of about 22, seemingly of a good constitution, well known in *Ennis*, and the county of *Clare*, as a fidler; about nine years ago was seized with a fever, which was succeeded by a violent pain in the left leg, that gradually descended to the foot. Blue spots began to appear about the foot, which gradually spread, became black, and, in a few days after, the foot, at the articulation of the astragal, with the tibia, fairly and spontaneously fell

fell from the tibia! An inconsiderable hæmorrhagy followed, which was easily mastered. Two or three ulcers, partly discolored, were formed on the inferior part of the tibia, which gradually healed; as did the extremities of the bones. About a year before, this poor lad had the right leg taken off, above the knee, by Mr. Garnet, a military surgeon, then in this city, and me; and got a speedy and good cure. The disorder was a caries of the external condyle of the femur, with an ankylosis, and deep fistula.

Obs. 10. March 12, 1756, a child, about six years old, was brought from the country with a hurt in her leg, near the instep (I supposed it a burn) received some time before. The part was black and insensible. I ordered fumes of the bitter, discutient herbs, with *sal. ammoniac*, and lees of claret, with which the leg was to be bathed twice a day, very warm; and a warm digestive to the fore; over which was a poultice of oatmeal and stale beer. Inwardly I directed a decoction of the cortex, with orange-peel and cinnamon; and to the strained liquor, *elix. vitriol*, &c. I would have first ordered some light mercurial  
purge

purge or two, but that the child seemed too weak.---I counted by the outward application that the black part would separate from the sound, and which, in a manner, was impenetrable to the knife; having endeavoured to scarify, that the dressings might reach to the sound parts, but could scarce make any impression on it. I also hoped that the internals (of which the child was to take a wine glass full four times a day) would warm, and dispose the blood to further our endeavours. By this method, the 16th, a visible separation, round the edges of the sore, seemed to promise a total separation of the morbid part; and which accordingly happened the 18th; but then the bone appeared discolored, and black underneath. For the fall of this eschar left the bone perfectly bare it's own breadth; and the flesh, round the edges of the sore, had a palish, red aspect. The hollow was filled with lint, wet in brandy, and the same stupes, poultice and internals continued. The 20th, the flesh seemed to crack at both sides the fore to the foot; and, by the 23d, it was intirely separated, so as to leave the tibia, bones of the tarsus, &c. bare to the toes. The limb was not now  
opened





opened above once in two days ; but wrapped up in linen, constantly moistened with strong spirits, and the internals continued. All this time the child complained very little, and seemed, in point of spirits, or appetite, no way altered for the worse. The 27th, Dr. *Martin*, and Mr. *White*, surgeon, were called in, and we all concurred to have the operation of amputation performed ; not that we expected any great matters from it, but that it might give people a handle to say, that all that could be done was not for the patient's advantage. The 28th, I took off the leg below the knee, in which nothing material happened. The sore, for some days after, went on so well, that the people thought they could dress it themselves, which was very easy, consisting of nothing but lint and brandy, covered by plaister, and a retentive band. In a word, *April* the 3d, the child died of this disorder, in spite of all our endeavours.

Obs. 11. *Bridget M'Inerbiny*, a very poor country woman, of about 40, of a delicate constitution, and the mother of many children, in the beginning of last *September* was seized, in walking the floor, with a sudden

a sudden pain and weakness in the right leg, so as to drop down. A dusky-red spot appeared in the middle of the leg, and the pain was extremely acute. Active and warming stupes and poultices were applied; and, in some days, the tumor seemed to point, and was opened by some man in the neighbourhood. But, instead of a great discharge of matter, as was expected, a small quantity of blood only followed, and the lips of the sore were discolored and thick. Her pain became now more violent, and the mortification spread with amazing rapidity, so that in about four weeks, from the first attack, from the knee to the toes, was the most complete sphacelus formed I ever saw. The parts were quite shrivelled, and perfectly black, with an insupportable fœtor. A sensible separation of the putrid parts, about the edge of the rotula, and nearly circular, appeared. This was exactly her situation when admitted into our Hospital; and the above the detail of her case, which I had from herself. For two or three days the putrid parts were covered with cloths, constantly wet in spirits; and she took inwardly warm cordials, and the bark. She complained

plained of excessive great pain in the parts, and yet no degree of inflammation appeared, nor was the pulse remarkably quick. The great importunity of the woman, joined to the very great stench of the parts, determined us on taking off this limb above the knee, which was accordingly done next morning. Not the least drop of blood followed the operation, tho' the tourniquet was intirely removed, and the operation performed in the sound parts, and above four inches from the spontaneous separation formed by nature! The divided flesh had a palish aspect, though the bone was perfectly firm and sound. The extremities of the arteries seemed closed by a black plug, and, though bathed with a sponge and hot water, for some time, yet not a drop of their contents escaped. \*

XVIII. Here then are the strongest evidences that can possibly be demanded in support of this practice. Where nature, left to herself, has performed such wonders, what may we not hope for when properly assisted by art? The two last cases opposed to the four or five preceding them prove to demonstration, that hasty amputation is not the proper help that nature wants. The

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\* she died the fifth day  
after the Operation



use of nourishing, balsamic diet, and invigorating medicines, assisted by warm, active applications to the parts, are the certain ones. And this method is not only consonant to experience, but confirmed by anatomy and reason. For, as the malignity begins to deposit in part, and that the mortification becomes circumscribed, it is demonstrable, that, where the separation is formed, a new kind of circulation is also establishing, similar to what happens after amputation. Therefore, the stench, or proximity of the sphacelated parts cannot affect the blood and juices, as it becomes, in some measure, a part separated from them; since it is the want of this circulation, that is the cause of the change. So that, if any danger is to be apprehended, it is from too hasty a use of the knife. I know of no objection to this rule, but one, and that is so obvious, as hardly to require mentioning----namely, where a considerable fracture happens in a constitution of this kind; and that, besides a formed mortification, the fractured part, for want of proper nourishing juices, no way adheres to the rest of the limb. In this case, a fever and alarming symptoms are kept up after nature has deposited

posited her load on the limb, which are only the consequence of this irritation. In such situation you must amputate sooner.

C H A P. V.

*Of the Gangrene, so properly called; or, of the third Species of Universal Gangrene.*

XIX. **I**N this, as in the preceding cases, the slightest hurt will give rise to very alarming, and dangerous symptoms---the scratch of a pin, a hurt, or burn, becomes, in a very few days, a case requiring the consideration of the first surgeons. The sore becomes discolored: it discharges a thin sanies; a dusky red (not an inflammatory) color surrounds the sores. In a day, or two more, this becomes a part of the sore; the pain is great, without any degree of inflammation, justly so called, because laudable pus is ever the consequence of inflammation. In fine, the friends, and often the surgeon, are at a loss what to do! In vain does he attempt to correct this bad disposition by a liberal use of the knife; because the sound flesh to

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day will become tomorrow mortified. Succeeding incisions bring on fresh misfortunes; 'till at the time the operator thinks he has exercised the utmost limits of his art, he has the mortification to see his patient a non entity !

XX. But if we reverse this picture, and that a man of sense will coolly ask himself, what end he proposes by all these incisions? That if the discharges from a small hurt give the parts so dangerous a tendency, sure increasing this discharge cannot mend, but rather make them worse. That it is more the habit of body, than the sore, that wants mending, he will quickly see the necessity, if not of altering, at least of extending his views, and giving greater attention to the symptoms. If he finds the pulse full, and the sore attended with great pain, he will probably find it very expedient to draw blood. In such case, purging physic comes in also very seasonably, and none will be found so effectual as mercurial purges. But if he finds the pulse low, the patient of a delicate, and tender frame, very little real inflammation about the sore—because, as we have already observed, *laudable pus is ever the consequence of this.* Its color



lor a dusky red. The swelling (if any) tho' red, yet inert; and the discharge a red, yellow, or thin ichor, with an earthy smell, lowness, fainting, &c. In this case, his method of cure must be more extensive. He must speedily make use of the stimulating stupes, embrocations and poultices, described (XIII.) the sores must be dressed with warm digestives, very hot; and a strong decoction of the bark on cinnamon water, with *elix. vitriol.* and warm bitters, must be given inwardly, as well as the nourishing broths, wine, &c. as directed at (XIV.) By this method, he will see with pleasure, in a very few days, the sore take a different figure. Hollow sinuses will become firm flesh, and a laudable pus will succeed to a thin, sharp ichor; the surface of the sores will gradually lessen, and health and appetite be restored.

Obs. 12. A lady, about eight miles from this city, of a seemingly good constitution, and a little beyond forty, hurted the fore finger of her right hand, by locking a cellar-door. It swelled, became painful, and in fine formed matter. A gentleman of this city was sent for, and laid it open; the sore, however, never digested well, and the

46 *Of the third Species of Universal Gangrene.*

the hand was much swelled. To remedy this inflammation (so apprehended) she was kept very low. But the 19th day, from the opening the sore, she fell into strong convulsions, which were followed by a stupor and insensibility. I was then sent for; and the cause of all this orgasm was attributed to her having taken a small bit of cheese, and a glass of wine and water after it the evening before. As I am a close observer of nature, I easily saw, that such a trifle could not account for the symptoms in question. Upon opening the sore, a yellow water discharged: the hand, fore arm, and arm were greatly swelled, and of a dusky-red color; and my probe could furrow up beyond the carpus. Never was there a fairer field for the knife! As the gentleman in attendance quitted on a call elsewhere, she became my patient in conjunction with Dr. O'Brien, a physician of eminence of this city, who warmly entered into my views, for the patient's recovery. We had the hand, and fore-arm stuped, with a strong decoction of the bitter herbs; and over the whole a strong poultice of oat-meal, stale beer, and *Venice* treacle. Upon inquiry, I found she had to this time  
enjoyed

enjoyed good health, had a good appetite, and generally took two or three glasses of wine after dinner. But, from the coming of her surgeon, had been kept so low, to prevent inflammation (and by the bye, without it, no fore can heal, as we have shewn in the second paragraph of this work) that for 19 days before, she never took more solid food than greasy water, or chicken broth, and a bit of toast twice a day. This, with some latent bad humors, accounted for all the above symptoms, as well as a puking she had on her. I had strong broth well seasoned, which I freely gave her, as well as toast and nutmeg, with a glass of claret now and then, likewise a new egg. As for the bark, in what shape soever she took it, her stomach rejected it. The stupes and poultices, as well as hot dressings to the sores, were continued morning and evening. About the third day, the swelling was sensibly lessened: a digested pus, for the first time, appeared: her stomach became settled, and her sleep calm. The fifth day I quitted her, being out of all danger; and, in some time after, her sore was well, and to this day she enjoys good health.

Obs.



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Obs. 13. In *January*, 1749, soon after my return from *Paris*, the wife of Mr. *Walter*, a chymist, in *Russel-street*, *Covent-garden*, where I lodged, of a delicate frame, by accident cut her thumb in the fleshy part, but so slightly, as scarce to draw blood. She took no notice of it, 'till the day after, when it swelled, and became very painful. A common plaister was applied to it, but the pain and swelling increased. The 12th, being the fourth day of the accident, I was prayed to look at it. The thumb was considerably swelled, and, by the touch, seemed as if matter was lodged there. However, to be more certain, I ordered a strong maturative poultice, with roasted onions; and, the next morning, with a lancet opened this tumor in the most prominent part; but no matter discharged, but a few drops of a bloody sanies. I dressed it up with a soft digestive. The pain of the part increased, and the swelling advanced towards the wrist the 14th. The following day, a putrid smell was in the chamber: the fore looked discolored; and several phlecinæ about the parts, even to the fore-arm. The 16th, a couple of gentlemen of eminence

minence were consulted; and the symptoms seemed so pressing, that they imagined an amputation of the fore-arm necessary to save the patient. Though this was the first case of the kind I had seen, and could not recollect any case similar to it; yet I observed to these gentlemen, that the progress of this sore, carefully considered, seemed to require a different treatment. That the affair in itself, scarce worth notice, becoming so troublesome before the opening, and so dangerous after, seemed to argue a very bad disposition of the juices; that amputation could not be said to remove this idiosyncrasy, since the same disposition of blood that could make a scratch become of that consequence, must necessarily produce more speedy and fatal effects in an amputation; and, for the same reasons, that even scarification should be omitted. Tho' this doctrine from a young man (not then 21) did not meet with approbation, yet my opinion, as the more gentle, was followed.----Upon inquiry, I found her in general of a bad habit of body, and not regular in her menstrual purgations. I, therefore, ordered some doses of purging pills; *epil. ruff., calomel., sal. mar-*

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*tis,*

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*tis*, &c. and, the intervening days, half a drachm of the bark, four times a day, in a little port and water. I also ordered a decoction of the bitter discutient herbs, with which the hand and arm were to be stuped twice a day, and a poultice of oatmeal and stale beer to the arm. The fore was also drest with lint and brandy, and the compresses, &c. wet in brandy. The 20th the foetor was gone, the parts began to look better, and she recovered an appetite she had not for some time. She still pursued her pills and the bark; taking of the former sometimes three and four of a night, so as to open her three or four times. The 24th the bark was omitted, and she took, for some little time longer, her pills twice a week. The swelling and discoloration of the fore were greatly lessened; so as by the 8th of *February* there was no appearance of a fore; and she has since enjoyed a state of health she had not for some years, as she assured me in 1753, when I again saw her.

Obs. 14. *Nov.* 6, 1750, the only daughter of a wealthy shopkeeper of this city, a child of about six years of age, playing at a table by candle-light, the blaze of the  
candle



candle caught the little border of her cap, which the boy, perceiving stoped the blaze; but so as a little blister appeared on her temple, not quite so big as a silver-penny. This was immediately rubbed with sweet oil, and no further noticed. However, the day following it became more angry and painful; and they then sent the child to Mr. Gould, an eminent surgeon of this city, and a humane, honest man: he was at this time in the gout, and directed such things as he thought proper. But the fore increasing, and growing more angry and painful, and he incapable by his disorder of giving it the proper attention, recommended me to be sent for. The 16th I had the above relation from the parents, most of which I heard before. At this time the fore had eat deep into the temple, and spread down the cheek, and to the lower jaw of the affected part (the left side.) The parts looked pale, and a disagreeable fœtor issued forth. I ordered a cerate made of sperma-ceti, white wax, oil of almonds, and sugar of lead to apply to the part; and a fomentation of the bitter herbs, with *sal. ammoniac* to bathe the fore, very hot, twice a day. Nevertheless, the fore spread,

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and the pain increased, so that a great part of the head was as deeply attacked as the face. Finding affairs in this condition, the 20th I desired a consultation not of surgeons, but physicians; and Dr. *Anketill*, a physician of great worth and honor was sent for. We ordered gr. 1-half of calomel, with a little lenitive electuary at night, and worked off next day with tincture of rhubarb. This purged seven times, with some griping. I continued the stupes, but instead of the cerate applied only lint and brandy to the sores. The 22d we repeated the pill and tincture; and again the 24th, with visible advantages to the patient, the progress of the sore lessening. The 26th she took a strong decoction of the bark, with cinnamon-water, and *elix. of vitriol*, a wine glass full every three hours. This seemed to agree with her stomach well, and the sore seemed to thrive from it; but as it was very much extended, required a great while to heal. The danger of death, which was very justly apprehended, being pretty well over, and the sore making strong advances to heal, instead of the above, we directed a strong decoction of *rad. sarsaparill.*, and the cortex, with the *tinct. styptic.*

*tic.*, and two drachms of the *æthiops* mineral to be divided in eighteen papers. She took a paper morning and evening, in a little balsamic syrrup, and about four ounces of the decoction after each dose, for six days; and the seventh a purge. This she continued constantly 'till the 22d, when finding the juices in a kind disposition, and that her stomach began to loath medicines, we rejected the further use of internals, and continued dressing the fore as before. However, it was not completely healed before the middle of *January* following. So great a ravage did this trifling fore produce, for want of balsamic juices to assist nature!

Obs. 15. *August* 10, 1754, a gentleman of considerable fortune near this city, aged about 40, by an unlucky accident broke the tibia very near the knee, a place which one could hardly suspect. In about two hours after, the accident (at nine at night) he received proper assistance from Surgeon *Vandelure*, a gentleman of great abilities and humanity, of this city. But, as he complained violently in the night of pain, I was called about four next morning to him, where I arrived before seven. Upon  
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opening the juncks, we perceived below the bandage, in the inside of the leg, a large black, watery blister about the breadth of a crown; and seeing the limb a little swelled, and knowing the patient not to be in the best habit of body, without further inquiry, we immediately cut through all the bandages, and found a large blackness to the breadth of three inches from the fracture to the knee. A strong decoction of the bitter herbs, with *sal. ammoniac*, was instantly prepared, with which the limb was constantly stuped for about half an hour, and then a poultice of oatmeal and stale beer, with the *theriaca*, was applied, the parts being first rubbed with *sp. sal. ammoniac*. Upon examining the parts, in an hour after, we perceived the blackness and phlestinæ to become more extended: these already cut, again replete with a limpid, bloody fluid; and many new ones, from the knee half way down the leg. Finding things in this ticklish situation, and the party a man of considerable fortune, we agreed to call for help immediately; and Drs. *Vereker* and *Martin* were sent for. By the messengers, we sent for some powders of the *cort. peruvian.* and  
*pulv.*

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*pulv. contrayrv. comp.* as also for a mixture of *mel. ægyptiac.*, *sp. vini camph.*, and *sp. sal. ammon.*, and a large bottle of this last separate. From this time to eleven o'clock (at which time these gentlemen arrived) we stuped once an hour, and, at each time, found every where watery blisters; not only those already cut renewed, but new ones from the knee to the sole of the foot; the parts likewise black and insensible. And tho' I saw the necessity of deep scarifications, yet, as we expected these gentlemen every second of time, we deferred them 'till they came----Contemplate the the amazing progress of this case! His leg broke about seven o'clock at night; reduced at nine; at seven next morning two large watery, black blisters formed, tho' the band was far from being too tight. From this to eleven, though the limb, free from any stricture, and the parts constantly fomented, and the blisters always cut, and dressed with spirits, yet again filling every half hour; and so many new ones forming, that from the knee to the ankle and foot seemed a complete sphacelus! About half an hour after eleven, I scarified pretty deep from the knee to the ankle,  
both

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both within and without the leg, and scarce any blood followed. These we dressed with the mixture of *mel. ægyptiac.*, *sp. vin. campb.*, &c. already mentioned. We continued the stupes every hour; and, besides the above, the sores were wet with *sp. sal. ammoniac.* He took of the powder's every hour in a little claret and water. About four he complained, as if the leg was of an immense weight. About this time, upon consultation it was agreed to take off the limb above the knee next morning; and every thing was accordingly prepared for that purpose. About seven the same thing was again debated; and I made my objections to this resolution. I observed, that a fracture of the tibia alone, tho' a complicated one, could never sufficiently account for so many, and sudden uncommon symptoms. These then must be resolved into the bad habit of body of the patient; and that of course the expedient proposed could bring no assistance to that. Therefore, I apprehended the only chance (and a very small one it appeared to us) left, was to pursue the method already begun. This discourse seemed to carry its weight for the present; but the determination



nation was deferred 'till morning. He raved most of the night; and about eight next morning we were suddenly called in, he being seized with strong convulsions, in which he continued for about half an hour. He came out of them very weak, but sensible; and the blackness was now spread above the rotula, but the blisters did not go higher than the knee. Upon a third consultation, the operation was absolutely rejected as useless; and we were unanimously of opinion, that he could not live beyond ten o'clock next day. That evening we were discharged; but as it was necessary to have some one to attend to the fores, and keep them in some order, that office was reserved for Mr. *Vandelure*, his friend. That night passed worse than the preceding; and, precisely at eight o'clock next morning, the same convulsions seized him, and he was judged in such a way that an express went off for a coffin, &c. However, in about half an hour, he came to himself, but very low. About ten, the convulsions-attacked him with double violence. About eleven, he seemed to recover from this kind of reverie; grew very warm, and seemed inclined to sweat, which was

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encouraged by plentiful draughts of warm wine whey. After twelve, from a profuse sweat he fell into a sound sleep, which continued 'till six in the evening. He awoke much refreshed. The blackness still continued, but the blisters were not so frequent. The 13th, he seemed much better, and his leg and thigh, as he expressed it, seemed as if asleep. That night he complained of a pain below the fracture; which increased the 14th and 15th, and the blackness and swelling began visibly to lessen; the 16th, it seemed as if matter was forming, on the out-side, and near the calf of the leg, to which strong maturative poultices were applied. That day, Mr. Gould was sent for; and the next morning this tumor was laid open, from which an amazing quantity of a foul, greenish stuff, was discharged. This was kept running for some days; and then, difficultly enough, healed. But it was above six months after, before he was able to quit his room; and to this day (*January 1760*) he walks with a pair of sticks.

This case made great noise over this city and county; and people were hardy enough to censure the surgeons and physicians

ficians who first attended him. It was said, that what we took for a mortification, was only a blackness, the consequence of a contusion; and that we despaired of him at a time when he was in no danger. But, from his case fairly stated, which numbers can attest, it must appear, that nothing was omitted, which skill could furnish, to save his life; and that if, from reiterated experiences, I had not so stiffly opposed the amputation, we should never suffer reproach, nor our characters be called in question for passing too hasty a sentence; nor should I, in particular, bear a double portion of it, who merited a very different return.

XXI. Sometimes a slight hurt, \* though ever so carefully dressed, from a coldness (only) in the constitution, shall become extremely troublesome. In two or three days, a thick, black, circumscribed buff, shall cover the sore. This many surgeons dress with præcipitate, and sharp dressings of this kind, and are surprized to see, after great trouble and time, the sore, if not worse, at least no way better. This is generally called, a dry gangrene, because

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ence,

\* This section, and the annexed cases, treat of the dry gangrene, properly connected to this chapter.



no matter discharges. The daily experience, of dangerous consequences, at best a tedious and painful cure, profitable only to the surgeon, should sufficiently explode a method of cure, not supported by reason, or experience. The safest and most expeditious way of curing these sores, is, by means of stupes of bitter herbs, soft digestives to the sore, to help throwing off the slough, and poultices of the warm kind, to further the same intention. But if the throwing off the eschar should be too tedious, and for fear of any ravages being committed underneath, in such case, a crucial incision may be made thro' it, as is practised after the application of a caustic. By this means the heat of your applications will sooner reach the quick, and the sore speedier heal. But the surgeon must observe, in these incisions, never to engage the circumjacent sound flesh, and even seldom to draw blood from the bottom of the sore. By the method described, in the beginning of this paragraph, I have seen bad consequences ensue; and about two years ago I remember a gentleman, of this city, of my acquaintance, by a slight hurt in the leg, which speedily formed a buff, to be kept confined for three months, and

to

to suffer a world of pain and misery, besides large doses of the bark, and some touches of the knife (an instrument too often more useful to the surgeon than the patient) before he got well. I shall just present a couple of instances, as good as two hundred, of the latter method of practice.

Obs. 15. In the summer of 1761, a gentleman of great worth and honor, of this city, at some distance off, happened to hurt his right leg; but so slightly, as that the skin was scarce broke: a brandy cloth was immediately applied, which gave great pain. Next day, the part was red and inflamed, and a bit of plaister was laid on: it nevertheless grew more and more troublesome; and, in some time after, I was sent for. A black eschar, or buff, exceeding a crown piece, covered the sore; and the surrounding skin looked angry and red. I had stupes, of the discuscent kind, immediately applied hot; dressed the part with a warm digestive *ex. ung. basilic., flav. & ol. terebintbin*, and over the whole, a poultice of half boiled flummery. Next morning, and again at night, it was so dressed, and the inflammation of the integuments

was

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was considerably abated, but no sign of the separation of the eschar. The better to promote this end, I directed, that he should take four or five glasses extraordinary of wine, every day, after dinner (for he was very temperate) and applied over the dressings a poultice of oatmeal, beer, and Venice treacle, instead of the flummery. For eight days, very little sign of a separation. I then made a crucial incision thro' this buff *only*, and dressed with the digestive hot, after the stupes, and then applied the oatmeal poultice. In about four days more, the eschar separated; the sore was then dressed seldomer, treated as any other common sore, and was soon after healed.

Obs. 16. A young gentleman, of a delicate frame, scalded his leg with boiling water; but whether owing to improper dressings, or constitution, or both, the leg grew worse; and, in some days, was covered with a black, hard, and leather-like buff when I was sent for. The stupes, dressings and poultice, already described, were immediately directed; and that night he took a mercurial pill, which operated next day five or six times. In three nights after the pill was repeated; and this was succeeded



succeeded by a decoction of the bark, on cinnamon water, with syrup of oranges, which lay well on his stomach. The eschar nevertheless shewed little tendency to a separation, tho' it did not spread. At the end of eight days, I scarified the diseased parts, and the eschar soon after separated, and the sore was after dressed like any common one, and was soon well. In these cases, the digestive should be of the soft kind, unmixed with præcipitate, or any kind of catheretics; nor should the surgeon be over sollicitous by probe, or forceps, to hasten the separation; as this not only often retards the works of nature, but is frequently the cause of a new buff: for, by the separation's being gradual, new flesh will insensibly fill up, and help to throw off the eschar, and the sore be the sooner healed.

## C H A P. VI.

*Of the Want of the Nutritious and Balsamic Qualities of the Blood and Juices, the Source of all the preceding Species of Gangrene.*

XXII. **T**H O' no tendency to a mortification appears thro' this class; yet, as it is the first alteration that the solids and fluids must undergo, before they can arrive to the different stages of malignity already explained, we thought a particular chapter on this head extremely necessary, both to confirm the theory and practice already laid down, as well as to shew the different stages of the universal gangrene, from its source to its highest degree of infection. Persons of this class are in general of a cold, chilly constitution, and the slightest hurt, is with difficulty healed, tho' it seldom grows worse. People of scrophulous habits of body, are generally liable to this complaint, as well as people under the first *criterion*, though otherwise generally healthy. But because nothing can clearer illustrate this, than observation, I have, out of a good number of cases, selected these following.

Obs.

Obf. 17. Mr. W-----, a young gentleman of this city, aged about 25, had in the beginning of *May* 1751, an inguinal tumor, which increased with very little pain. He shewed it to me the 10th, and it appeared large, and to the touch full of matter, tho' no discoloration of the skin attended it. I was pretty well convinced it was not venereal; though, if it were, the consequences of it could not be reconciled to any thing of that sort. The 11th I gave it a large opening, and abundance of matter issued from the aperture; the succeeding days, every thing went on well, except that there was no appearance of inflammation or soreness in the part. By the 18th the sore looked worse, and sinuses began to form, which I opened, and ordered inwardly the alterative mercurial pill, with a strong decoction of the guajaicum and sassa, &c. He took two of these pills night and morning, with about half a pint of the woods; and in order to raise an inflammation in the sore, I ordered a warm digestive, with the precipitate, in which doffils were dipt warm, and over the plaister a poultice of oatmeal and stale beer.

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beer was applied night and morning. By the 30th the sore was rather worse; no pain, no inflammation, no tendency to heal; and wherever I put my probe, I could easily raise up the corpus adiposum! Conceiving this strange insensibility to proceed from too great a colliquation of the humors, I forbid the use of mercury, and ordered an electuary of the cortex, with *pulv. contrayervæ composit.*, candied nutmegs, &c. to be taken the bigness of a nutmeg three times a day, taking a glass of generous claret after each dose. I directed his meats rather roasted, always fresh, and pretty well seasoned; and to take better than a pint of wine after dinner. The discutient herbs, extremely hot, were applied at each dressing; but upon this occasion, and ever since, where I found them necessary, I had the liquor strained off, and put hot in sheep's bladders tied, and so applied to the part. By this means your stupes are always hot, comfortable, and no apprehension of getting cold after them. But to return. Will it be believed? In spite of this regimen and new course of medicines, we gained nothing on the sore! His stomach was  
good,

good, as well as his spirits: he slept well, and had all the functions of nature! The month of *June* passed, and he still carefully dressed, and yet to very little visible advantage, save that the sore did not grow worse. In the beginning of *July* I directed strong port to be drank instead of claret, and sometimes punch by way of stimulus, and yet to little purpose; the edges and sides of the sore no more altered in color than the rest of the skin; and the sinus's that were opened rather worse, which was no encouragement to increase the cutting, tho' there seemed to be more need of it. But by reason of the insensibility, and little disposition in the parts already opened, there could be little inducement to attempt new wounds. In a word, *July* and *August* passed with but little sign of amendment; and he set off for *Liverpool*, in his way to *Guiney*, in the middle of *September* following, tho' much better than he had been, yet the sore not half healed, which I told him, I hoped the heat of that climate would effect. This gentleman, tho' seemingly hearty and full of spirits, yet had always a great paleness in his countenance. However, we must remark

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this case, that the wound never seemed to grow very bad, so as to apprehend a mortification. The lips and sides of it were of the same color as the rest of the skin; but the extreme insensibility, and little tendency to heal in it, were circumstances very remarkable. But when I say insensibility, I would not be understood to mean, that the fore had no feeling far from it. He always complained of pain, on the use of the precipitate, and seemed very sensible of the heat of the stupes. But tho' I exerted what knowledge I had to serve him, as I think this honest state of his case must certify; yet I had the mortification to find myself censured, and even by those who should know better. So necessary is success, or a good constitution, to gain applause.

Obs. 18. *May 12, 1759*, I was sent for about 20 miles distant from this city, to examine a gentleman's child about six years old, who had a large tumor of the incysted kind in the middle of the right thigh, between the semi-nervosus and biceps muscles. Three other children, who were under preparations for inoculation, had, at different times, received slight scratches, which,



which, at this time, were rather worse than when the accidents first happened. In particular, a child about five, received a slight hurt in the temple about a year before, which, though with time and difficulty healed, yet left a tumor behind that gradually increased, and to the touch seemed replete with some fluid, on which they kept a mercurial plaister. All these appearances were small inducements to perform an operation on the child in question; however, upon strong sollicitations, I opened the integuments, and, though the tumor lay very deep, yet I fairly extracted both matter and cyst. The cavity was filled with loc lint, and covered by the gum-plaister, over which I applied a compress wet in brandy, with proper bandage. As my stay must be attended with a good deal of expence to the gentleman, who had many children; and a kind of surgeon being retained in the house, I left with him my directions in writing. I ordered the bottom of the sore to be dressed hot, with a digestive, *ex ung. e gum. elemi, præcipitat., rubr., & ol. terebinth.*, the rest of the cavity to be filled with dry lint, and the whole retained by the gum-plaister spread on linen. My intent in this was to  
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draw a proper degree of inflammation, which the parts much wanted, in order for incarnation. The 25th I was again, by letter, requested to visit my patient. I found the discharge very inconsiderable, but no appearances of inflammation, or tendency to heal in the sore: on the contrary, my probe found a loose space, between the interstices of the muscles, to furrow in! As I suspected, besides a coldness of the juices, some degree of scorbutic, or scrophulous humor might be in the blood, I ordered powders of levigated crude antimony (an excellent medicine in proper hands) and *æthiops mineral* to be taken morning and evening, with a glass of a strong decoction of sarsa and the bark, with *elix. vitriol*, for six days successively, and the seventh, a light dose of rhubarb; and this course to be continued for about six weeks. I also directed the sore to be stuped, at every dressing, with a decoction of bitter herbs, and a poultice of oatmeal over the dressings. By the middle of the following month the sore seemed to be in the same condition, though I directed his nourishment pretty freely; such as strong broth, a fresh egg, &c. and always a glass of

of claret every day. In a word, about the latter end of *June* he took the small-pox, and died the 12th day. The other children had it in a most favourable degree.

Nothing discouraged by this attempt, in the middle of *July* he wrote me a pressing letter by the surgeon in question, requesting I would come to see the other child, of whom he had spoke to me before; whose tumor was now so considerably augmented as to press upon the eye; with directions that he should not quit town without me. Accordingly,

Obs. 19. *July* 20th, I visited the child in question. The tumor had considerably augmented since I saw it before, and attended with pain. I told the father that this tumor was of the incysted kind also; that I was confident the operation could be safely performed, nothing being to be apprehended but the division of a ramification of the temporal artery; but that the little disposition I perceived to heal in any of his children, and the poor success in our former attempt were such discouragement, that I choose to decline it. However, at his earnest entreaty, performed it: the matter laudable, and the cystis quite extracted.



ed. The directions for dressings, &c. with the medicines, were pretty much the same as in our former case.

I again visited the child the 29th, and every thing seemed in a thriving way, the sore almost healed, except a little, soft, white speck in the middle. But, in three days after, it discharged a good deal of matter, and the cavity became as large as the first day. In some days after, it was again brought to the same pitch of perfection, and again burst forth. The 6th of *August*, I found the sore as open as immediately after the operation, and hollow round about. I told the father, in another patient I should be apt to lay open these sinuses, but I would do no more here, for fear of making bad worse: recommended the same dressings, covered with a plaister of diachylon with gums, and the mercurial plaister mixt. To continue the sweetening woods alone, for fear the mineral would divide the globules of the blood to much; and to give the child a glass of claret every day, and now and then some seasoned broths, to animate and warm the blood and juices. In a word, I am now transcribing this, with other cases  
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the 12th of *February* 1760, and the sore is not yet healed!

This gentleman told me, that a child of his brother's had a small sore of its upper lip, which was attended by an eminent surgeon: that it grew black and discolored, was scarified, and grew worse. That a second was called in; and as the mortification and sore spread, the scarifications followed.---*Passibus æquis*. In fine, the whole face and nose, in a very few days, became a very deplorable sight, and the child died soon after.

XXIII. Perhaps there is no part of the healing art more instructive and useful to mankind, than an honest recital of unsuccessful cases, well classed. The *clear* part of our practice (to adopt the painter's phrase) is oftner owing to the bounty of nature and constitution, than to our art: the *obscure* is mostly where nature and constitution inflexibly oppose art. The monuments left of this, serve our successors, as incentives, to explore the causes of these defects of nature, and to endeavour to remedy them. But few surgeons have the candor and courage to

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declare

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declare their defeats; though the great *Hippocrates* has set us the example, in nobly acknowledging that he once mistook one of the futures of the skull for a fracture of the cranium! I have in the above chapters given a fair recital of unsuccessful practice, and I hope a profitable one to surgeons; since it proves, in the clearest manner, the different transmutations of the Universal Gangrene, from its first out-lines to its highest degree of malignity: and even through the whole, particularly in the present chapter, tho' I have selected only such cases as failed of success, carefully suppressing any other; yet the surgeon will see, and must acknowledge, that in the treatment of these I have carefully described the only rational method of bringing most curable cases of this class to that desired point.

C H A P.



C H A P. VII.

*Of the Gangrene proceeding from an Inflammatory State of Blood.*

Respectfully INSCRIBED to

ROBERT T. ROBINSON, M. D.

*Of the King and Queen's College of Physicians,  
Dublin, and Physician to the State.*

XXIV. **I**N this case, the blood being very active and warm, and the parts endued with an high degree of sensibility, any violent hurt soon determines more blood here than the vessels can contain, or conveniently return. Inflammation becomes the immediate consequence of this obstruction; which, if not soon relieved by profuse and repeated evacuations, abscess or Gangrene follow; and from this last the most melancholy apprehensions are to be expected.

Obs. 20. This state of blood is, in some constitutions, so fiery, that in a gentleman of my acquaintance, tho' about 40 years old, from a slight hurt in the nose, so violent an inflammation and fever arose,

that three profuse bleedings in 24 hours, with nitrous and other antiphlogistic medicines, were scarce sufficient to reduce it, and to bring the fore to an healing state: had I not made use of these means so speedily, it is easy to foresee how this fore, trifling as it was, would end.

Obs. 21. Another gentleman I also attended, who, from a slight hurt on the leg's being dressed with brandy cloths, became highly feverish, the leg greatly inflamed, and the lips swelled, distended, and discolored. I immediately had a good quantity of blood taken from his arm, the leg fomented with stupes of the emolient kind, to which new milk was added, not *very hot*, but rather *moderately warm*; the fore dressed with basilicon, softened with oil of roses, spread pretty thick on lint; the leg chaffed with fresh sweet oil, and a poultice of half-boiled flummery over the whole. An injection was thrown in soon after, and he took every hour a paper of sal prunel. Next day more blood was drawn, and the stupe, dressing, embrocation, and poultice repeated. The pulse continuing full and hard, determined me to take more blood that night. Next morning the

the fever and thirst were greatly abated, the swelling and inflammation of the leg much lessened, the fore discharged a good deal of matter, and he had some sleep. I now directed the stupes pretty hot, and instead of flummery, had a poultice made of oatmeal and water applied. He still continued his powders of nitre; and instead of a very severe restriction, in point of diet, I ordered a freer indulgence in this article. The fore soon became simple, and like such speedily healed.

Obs. 22. A female servant to a family of this city hurt her hand by the point of a nail, near the *ligamentum annulare*, but very slightly: the pain, nevertheless, that succeeded was very exquisite, attended with shriekings and convulsions. In this situation I was requested to visit her. Finding the pulse very full and quick, I immediately had blood drawn from her profusely, and over the dressings of this trifling fore I applied a poultice of flummery. She seemed much easier; but in about two hours after, the pains and shrieking returned, and she was again bled on the spot: she took physic next day, was kept low for two or three days



days more, and was speedily well. The symptoms were here so rapid, that, in a few hours, a most dreadful inflammation must have followed, the effects of which might have been fatal, but for these very seasonable evacuations.

Obs. 23. Some years ago Mr. W---, an apothecary of this city, of a delicate constitution, burnt his hand by some oil of turpentine which he was using, in making Venice turpentine, catching fire. Tho' the parts were but slightly hurt, being but two small blisters on the back of the hand, yet the pain proceeding from them was highly exquisite. In a few moments from the accident, I found him raging like a mad man: he would just shew me his hand, and before I could well see the cause of this unusual orgasm, he'd fly away, stamp round the floor, and throw himself on the ground. I was for a little while at a loss what to do, he every now and then applying to me for relief, and presently flying off. I at length determined to bleed him, tho' on a less pressing occasion it would appear (by the sores) highly ridiculous. The veins were turgid enough already, and the blood sprung out with

with great force ; scarce were three ounces drawn when he grew easier ; and upon taking about twelve he grew quite cool, begged to lie on the bed, where he soon fell into a profound sleep, out of which he did not awake for some hours, and in a few days after his sores healed kindly.

XXV. Whilst most writers agree that Gangrene is the consequence of every violent inflammation, that does not by remedies disperse, or form abscess; and that most Gangrenes proceed from this cause, it appears demonstrable from what has been said, and from what shall hereafter be advanced, that Gangrenes of this class bear but a very small proportion to the general run of mortifications. Of consequence to resolve every kind of Gangrene into an inflammatory state of blood, is not only false in theory, but highly dangerous in practice. Nor is every sore, or mortified part, attended with great pain and a quick pulse, to be deemed to owe its rise merely to an inflammatory state of blood, since both these symptoms attend mortifications proceeding from a cancerous case, in which bleeding is not indicated. But where inflammation, pain and fever, soon follow

follow a slight hurt, or accompany it, there, and there only, all the evacuations already described become necessary; and when these discharges are omitted, and that a Gangrene supervenes, this *only* may be deemed a mortification from an inflammatory state of blood.

XXVI. Having thus described the causes and nature of a Gangrene, caused *only* by an inflammatory state of blood, and the means of preventing this effect, when timely taken, we now proceed to describe the means of help, where the mortification is already established. As nature is, in some measure, eased of the violent orgasm of the blood, by the mortified part's receiving and keeping (not returning) the more active parts of the blood, evacuations are now to be used with great caution. If violent pain and fever still subsist, bleeding and antiphlogistics are certainly the first indication; if not, they must be used more sparingly. But in either case, scarifications (and they profound) must be first used to the upper part of the sore: stupes of the discutient or emollient kind should also be applied, either very hot, or moderately warm, according



according to the symptoms: that is, if the fore is attended with high inflammation and pain, they should be but warm, and the dressing soft and balsamic, in order gently to relax and restore a freer circulation; but if the contrary, the stupes must be very active and hot, and the dressings of the warming nature. If the patient be low, warm cordials, nourishing diet, and the bark, must be often administered; and if it shall appear, in some days after, that nature shews no inclination to restore any kind of circulation here, but that still a digested pus issues from the scarified parts, or that they heal kindly; in this case there is all the reason imaginable to think that amputation will be attended with success. But if, on the contrary, the patient is faint and low, the scarified parts, instead of healing, or discharging good pus, grow more black, and that the sound parts contiguous to the incisions shew a tendency to mortification; instead of attempting to cut off the limb, you must repeat your incisions, your stupes, and poultices, all of the most active and stimulating kind. *Nor ever think to amputate, till the mortification be-*

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*comes*

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*comes circumscribed.* It is true, if it still spreads, the patient may die, in spite to all our endeavours; but it is also most certain, that by *amputating, in this situation, you make it impossible for him to live.* In the first case, by still pursuing the tract described, it may, *possibly*, become fix'd to some part; in the latter, tho' nature might possibly effect it, yet by too hasty an operation, she is absolutely prevented.

Obs. 24. A poor man came recommended, some years ago, to the late surgeon Gould, of this city, a gentleman of great merit in his profession, and whose humanity and charity were every where conspicuous. Some days before, in thatching a house, he fell from a ladder, and broke his right arm: a bone-setter soon after came; but whether the bands were, at first, too tight, which is not improbable, or that the great pain and extreme sensibility might draw a greater flux of humours, or both, the hand and fore arm swelled very much, and the pain he was in was very great. No attempt being made to relax the bandages, or relieve the inflammation by bleedings and other evacuations, a numbness and insensibility gradually

gradually succeeded to the pain and inflammation. The parts became of a dusky red, and then black, with watery blisters, and a complete sphacelus was soon after formed. Being ill of the gout, he requested my attendance immediately; and on consultation with a couple of military surgeons, amputation was agreed upon, and directly performed by me, in the presence of these gentlemen. Tho' the limb was taken off two inches above the discolored parts, in the sound flesh, yet not a single drop of blood launched from any of the arteries, on relaxing the tourniquet. The mortification soon after gained his shoulder; and in about six hours, from the operation, he died. Before the operation his pulses were pretty moderate, he spoke distinctly, and walked about!

XXVII. As soon as a mortification becomes formed in a limb, the first intention of most surgeons is to amputate. Indeed the almost general ill success attending hasty operations of this kind, one should imagine, ought to deter us in succeeding cases: the fact is, nevertheless, otherwise. A very great inducement with



gentlemen in such circumstances is, I am persuaded, a kind of certainty of the patient's death, in either case; and the fear of censure, in case he should die without any mutilation. But both experience and reflection will convince us, that no time is so improper for such an extremity, as at the very instant of the mortification's forming; because the blood and spirits are in too great a ferment, and nature has not yet deposited all the load of oppression. But if, instead of this, we make use of profound incisions, discutient fomentations, warm poultices and cordials, as already directed (XXVI.) we shall find the greatest advantage to the patient, as well as to our own character. If, nevertheless, these be attended with no sensible advantage, is it not more humane to endeavour to reconcile the patient to his fate, and to make the proper use of the small portion of time, by the author of nature allotted to him, than by a cruel (I may say, at this time, an inhuman) operation, to hurry him out of the world, distracted by hopes and fears, and the aggravating apprehensions which such a method must necessarily throw him into?

Obs.

Obs. 25. Daniel Sheehan, about nineteen years old, of a warm temperature, fractured his leg. This case fell into the hands of a bone-setter, who applied a very tight bandage, and took little care to make any evacuations by bleeding, &c. The exquisite pain and sensibility of the part was soon followed by mortification; and the total blackness of the extremities, with *Phlektinæ only*, first induced this wretch to cut away the bands. This was the seventh day from the accident. He was with great pain and difficulty removed from the country here the 18th. He had, at this time, a very quick pulse, great pain, and so great a stench from the leg, as not to be supportable, but by covering it with strong spirits. There was no more cohesion in the fractured parts, than if they had been but just broke, and completely black and sphacelated to about two inches above the bandages; that is, to about four inches from the knee. He was then admitted into the hospital, the leg gently extended, and covered with a piece of linen constantly wet in brandy. Next day the stench was somewhat abated, his pulse more moderate, and he got some sleep.

sleep. This day the same process was pursued, and he got the next night still better. But as every motion gave a fresh irritation to the divided parts, and that it was judged absolutely impossible to save the limb, it was taken off next morning, and he recovered, but after a very slow and tedious manner.

XXVIII. No instance can more strongly prove the absolute necessity of delaying amputation, in mortifications of this class, than the last recited case; especially if contrasted to the one immediately preceding it. In fact, tho' the bands were intirely removed the seventh day, yet the pain continued with great violence till the fifteenth, when an incipient putrefaction first produced some ease. As this increased, the pain lessened. But on removing him to town, the motion produced fresh pain. It is, nevertheless, very remarkable, that though the amputation was not performed for three days after his admission into the hospital, yet that the stench greatly lessened during this period, and his pulse and rest at the same time became quieter. Had my advice been followed, the operation would have been delayed



layed for some days longer; the upper part of the leg scarified; stupes and warm dressings applied to it, and the other symptoms relieved.----But this seemed strange doctrine to the gentlemen present, who were pretty numerous; that the operation should be delayed, where I acknowledged a complete sphacelus, and at the same time admitted the absolute impossibility of saving the limb by the delay!----My reasons were, that the blood was not sufficiently disengaged from the effects of this accident; and certainly the event shewed I was a good deal right; and had it been my time of attendance on the hospital, no entreaty would have prevailed on me to alter my opinion. However, the stump healed with great difficulty; exuberant flesh daily sprouting up, and in seven weeks from the operation, there was very little advances towards healing, notwithstanding a variety of applications for that purpose, as well as inward medicines. If the cure was with so much difficulty effected, tho' the operation followed so long after the mortification, what must have been the case, had it been performed as soon as the Gangrene appeared? It is manifest

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manifest it must have been followed by death, as happened in Obs. 24th; and it is also demonstrable, that delays in such cases are the only sure means to give a chance for life. I am the more fond every where of exposing my reasons for practice, so opposite to the general method, and of so much consequence to mankind, and to posterity; as the stronger the conviction, the less the obstacles to its establishment.

Obs. 26. Mr. R-----, a young gentleman of the county of Tipperary, happened to break his leg at about five miles from this city, which was soon after dressed by a bone-setter of the neighbourhood. The man being of a plethoric habit, and the bandages tight, a very great inflammation followed; which, for want of proper evacuations, and neglecting to relax the bands, brought on a violent swelling and discoloration of the extremity of the limb, with black watery blisters, and an high fever, in three days from the accident. Early next morning I was sent for, and without much hesitation, I with my scissors cut thro' all the folds of the bandages; had the whole leg and foot well fomented with stupes of the bitter active kind; cut  
all

all the blisters, and made a good many longitudinal incisions on the extremity of the leg, and on the foot. The leg was covered with a fine linen cloth doubled, and wet in brandy, and he immediately after bled, and powders of nitre given from time to time in his drink. As the pulse was still very full, he was again bled that night, the stupes again used, and the brandy cloth applied, with directions to have it moistened from time to time. Next morning, and again at night, the stupes, &c. were made use of, without the leg's being all this time restrained by any bandage. The third day the swelling was greatly abated, and the discoloration and fever visibly lessened. I this day applied the eighteen tailed bandage, but still directed the use of the stupes morning and evening. The sixth, finding the swelling quite gone, and the incisions healed, after making a *gentle* extention, I applied the usual apparatus for a common fracture. The man did well in the ordinary time, and his leg was exactly even.



C H A P. VIII.

*Of a Species of Gangrene, subsequent to  
Pblebotomy.*

ADDRESSED TO

NATHANIEL BARRY, M. D.

*Of the College of Physicians, Dublin, the  
King's Professor of Surgery and Midwifry,  
and Physician General to the Army, as a  
public Testimony of the great Respect and  
high Esteem of the AUTHOR.*

XXIX. **T**HE only accidents hitherto described to follow bleeding are, first, a slight inflammation, and sometimes abscess, if the lancet be bad, though the patient safely bled; or, secondly, a violent one, often attended with alarming symptoms, if the *aponeurosis* of the biceps muscle be prick'd; or, thirdly, an *aneurysm*, where the artery is wounded. That Gangrene and death should follow bleeding with very little, if any degree of inflammation, is what has to this time passed unnoticed by writers: of course the causes and symptoms unknown. It is  
true

true that *Dionis*, an excellent surgeon, and most diligent observer (*Cours des Operations de Chirurgie*, p. 680.) mentions in a cursory way two or three unhappy accidents of this kind; and it is to be remarked, that *M. La Faye*, in his curious and useful notes on this writer, in which every modern improvement and discovery in surgery is minutely detailed, makes not the least comment on this interesting passage, tho' he does on many others of less consequence; an irrefragable proof, that it escaped the notice of our modern surgeons. Nor can I recollect any other author who has made the least mention of such accident.

XXX. In fact, in cachochemic habits of body, where the humors are ready to fall upon any part---*Quá data porta ruunt!*---if a hurt happens---suppose by pricking a tendon in bleeding---for want of sufficient elasticity in the parts; or a proper sensibility in the *genus nervosum*, or both, it will not be disposed to inflammation and abscess, nor yet to disperse; but remains indolent and swells, with a slight reddish streak, the length of the biceps muscle, if in the arm. If this swelling

be neither a true *oedema*, nor yet an inflammatory one, attended with a quick pulse, a little reflection will soon make us apprehensive of the consequences of it. For, in this state of indolence, the disorder insensibly gains ground: the arm swells, with a reddish streak: the forearm becomes oedematous, cold and insensible; the tumefaction reaches the shoulder and sides, and the patient soon after dies! And that accidents of this kind are far from being rare, the following cases, that fell under my own immediate inspection, will evince, besides others I have since collected from some of my acquaintance.

Obs. 27. In February 1759, I was sent for to visit a tenant of colonel Croker's, who had been bled a few days before in the right arm. The man, tho' of a robust constitution, seemed otherwise heavy and indolent for a young man. He complained of a good deal of pain the instant of bleeding, but yet worked for two or three days after. His arm was, nevertheless, sore; and when I first saw him, which was six days from the accident, greatly swelled from his fingers to the shoulder, and a few black spots about the bend of the  
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the arm, but no sign of a fore where he was bled. His pulse seemed full and strong; he had a constant short cough, and sweated a great deal. I scarified his arm lightly in several places, but more profoundly in the discolored parts; had strong discutient fomentations and poultices applied, which I directed to be repeated night and morning, took away some blood, and ordered an active warm purge. In two days I repeated my visit, and found the swelling reach the side, though rather lessened in the fore arm. No phlestinæ were formed, nor did the discoloration increase, but a shortness of breathing and cough subsisted. I now ordered the bark in substance, and strong broaths to assist nature to reject this load of oppression; and though I assured the people, that the man was rather better than worse, and that I had some good hopes of his recovery, yet he died the evening of the next day.

Obs. 28. Mr. C-----, a farmer near Croom, in January 1762, was bled for some slight indisposition. He found a little more pain than usual at the instant of bleeding; but when the arm was banding

banding up, after the operation, he complained of grievous pain on pressing the orifice. He was abroad the next day, and found the orifice sore, which increased the day following; and finding it grow more troublesome, I was sent for the fifth morning. Instructed by my former miscarriage, I was determined not only to be more cautious here, but to inform myself minutely of the nature of a malady, which had hitherto escaped the observations of the first men of the faculty. The man was about forty; and tho' seemingly delicate in his constitution, yet hardy, and subject to no disorders, except inflammatory colds. I found him with a quick pulse, and a little husky cough; the arm swelled lightly, with a reddish streak over the biceps, and reaching up to the shoulder, from the bend of the elbow. He could still bend and extend the arm; nor was the pain great. I bled him in the other arm, and ordered stupes and poultices of the warm kind to the affected parts; but told the people, that I apprehended things would not go right, as there was not a *sufficient degree of inflammation in the parts to form matter, and too much to expect it*  
would

would disperse. I also ordered a warm purge, of tincture of fenna, animated with a little tincture of jallap, on a presumption of throwing off some of this cold, pituitous humor, from the body.

Three days after, I was again called. The swelling by this time, and in spite of what was done, had reached from the arm to the tops of the fingers, and even that side was affected: his pulse was very quick, and he had a short cough, which seemed to me to proceed more from the efforts of nature, to force a free circulation through the lungs, than to be a distinct malady. The questions I asked him, confirmed me in my suspicions, and I think the remark too material to be omitted. The swelling in the hand, and fore arm, was quite oedematous and cold, without the least degree of elasticity, nor could I perceive any sensibility in the parts. The length of the arm it was more mix'd. I had the arm extremely well stuped in a decoction of the bitter herbs, with a good deal of tobacco leaves on stale urine, and a poultice of oatmeal and old bottled beer to cover the parts. ----- And though the accommodations were here far from being  
con-



convenient, and that by staying, if the man died (which seemed almost certain) I should expose myself to much censure, which by giving a transient opinion, as before, could not happen, yet was I determined not to quit this place, till I saw the conclusion of this disorder ---- Resolved, at all events, to be able to trace it through its progress to its final issue.

Finding, about ten o'clock that night, the hand and fore arm perfectly cold, and the swelling and coldness ascending to the shoulder, with an increased oppression and cough, though he had that afternoon taken, by my directions, strong port whey for his common drink, strong seasoned broth, and a couple of glasses of claret, with a bit of toast at some intervals, all which the stomach retained ---- I took the resolution, on the spot, of making many profound incisions the length of the arm, in hopes that the activity of the stupes and poultices would sooner pervade these parts. As for the fore arm, I deemed that, at best, impossible to be saved; therefore applied all my attention to the arm itself. Wherever I carried my incisions, I found the corpus adiposum  
swelled

swelled and spongy; insomuch that at the depth of an inch I could not pervade it; (and this, by the bye, shews, that in similar cases we need not fear making profound incisions) and water as clear as chrystal started from the wounds. This issue I increased, by pressing the contiguous parts, but it ceased with the pressure. I began these incisions near the bend of the arm, and round it, in nearly parallel lines, each above an inch long, and at about half an inch distance. The quantity of water I pressed from these sores, after stuping, determined me, in about two hours after, to perform a similiar range of profound incisions, about two inches higher up the arm. After again stuping, I dressed the sores with a mixture of *mel ægyptiacum*, *tinctura myrrh. cum aloe*, & *sp. sal ammon.* and the poultice to cover the whole; desired port wine whey to be given for his constant drink, to assist in forming certain limits between the mortified and sound parts, and then retired for the night.

*Postera cumque dies, primo surgebat Eo,  
Humentemque aurora polo dimoverat umbram.*

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About

About eight this morning the swelling of the arm had little abatement : he slept little ; his cough was constant ; but he sweated a great deal. I then made a fresh range of profound incisions higher up, out of which I pressed a good deal of clear water ; but all the former ones, tho' the lips were extended, yielded none 'till I refreshed the bottoms of them. By this means, and a gradual pressure, from the shoulder down, the swelling sensibly lessened to the eye ; but upon again examining, about twelve o'clock, the arm was as turgid as before. I now made a fourth range of incisions, which reached to the shoulder, pressed out some water, and cut others of them deeper, to make the more drains --- Stuped the whole, excessive hot, and dressed as before described. I still continued the port whey ; and notwithstanding the quickness of the pulse, he took a paper of bark every two hours ; he took also toast and claret, strong broth, and two fresh eggs. At night the arm was visibly lessened ; and upon renewing one of the incisions on the anterior part of the arm, and as near as I could conjecture over the biceps muscle, about a  
table



table spoonful of pus, of a pale whiteness, spurted out of the orifice, and he, for the first time, sensibly felt the heat of the stupes, and the activity of the dressings, which, as he observed, produced a tingling heat all over the arm. He passed this night with refreshing sleep; his pulse became more moderate, his cough lessened, the swelling was greatly abated, and a breathing heat began to glow in the parts. After stuping for some time, instead of the *mel ægyptiacum*, &c. already described, I had the sores dressed with pledgets armed with a digestive of *ung. basilic. flav., præcipit. rubr., & ol. terebinthin.* warm, and over the whole arm the poultice of oatmeal and beer. On the fore arm I also made several profound incisions, dressed them with the mixture of *mel ægyptiacum, tinct. myrrh. & sp. sal ammoniac.* and over this the oatmeal poultice. On opening the sores at night, those of the arm, which before seemed so deep and extended, now appeared small and superficial, on account of the subsiding of the swelling of the skin and corpus adiposum, and these of the fore arm greatly lessened. I quitted this man next day, and he soon

recovered both his health, and the use of both arm and fore arm.

### REFLECTION.

Never was, I believe, a more pressing case than this; and few surgeons, perhaps, would have curiosity and courage enough to act the part that I did. But I began my profession with two fix'd principles, which I have never yet deviated from, and which I would earnestly recommend to every young surgeon.

I. Never to think himself arrived to perfection, in a profession of so much consequence to mankind: of course to be ever open to conviction, the result of new observations, either of his own, or others.

II. After making an ingenuous prognostic, in truly dangerous cases, never at the same time to refuse his hearty assistance, or decline any operation, that may give a chance for life. The reverse of this, (too often the case) tho' it may be deemed sound, yet I cannot help branding it with the epithet of infernal policy.

Obs. 29. The daughter of a poor woman of this city, about four years old, and seemingly healthy, was bled in the foot  
for

for some feverish attack. She did not bleed freely; and the man, in pressing on and fretting the orifice, in order to make the blood flow faster, brought on a smart inflammation: the orifice grew sore, and the foot was a good deal swelled next day. The day following the circumference of the fore grew discolored, and the foot more inflamed. The third day they brought the child to me. From the ankle down there was a considerable swelling of a dark, livid color, the pulse quick, and clammy sweats, with puking. I on the spot made use of incisions to the mortified parts, had stupes of the active, stimulating kind applied, and over the whole the oatmeal poultice. As she could not keep the common drinks on her stomach, I directed a light, pleasant lemonade; and she took that night two grains of mercury, which purged smartly. The stupes and poultice were directed to be continued morning and evening; and a decoction of the bark, with elix. of vitriol, was prescribed, but which the stomach constantly rejected. For some days the parts had a very bad aspect; and I apprehended I should be under the necessity of taking off the leg: but  
in



in some days more the symptoms gradually subsided, and she recovered with the loss of the big toe, near which place the attempt to bleed her had been made, and the two adjoining ones. The whole side became after this paralytic, as well as the leg and arm; and the use of the arm she has not since recovered, tho' now eighteen months from the first accident!

Obs. 30. Andrew Conroy, aged 26 years, well made, and, to appearance, of a strong constitution, in May 1760, was seized with a fever at Ennis, for which he had been bled in both feet, not in the saphena, but in the middle of the foot, from neither of which vessels much blood came, but he was a good deal hurt. His fever continued for many days, and his recovery was but slow. During this last period, his feet became very troublesome and painful, and were probably so before, though not attended to: the orifices of the fores became swelled and distended, and the intire feet inflamed and discolored. Warm stupes, poultices, and other assistances were not omitted by Mr. Burke, a surgeon of eminence and humanity there residing.

residing. In fine, the mortification became fix'd to both feet; and in some time the feet, at the junction of the bones of the tarsus, with the metatarsus, spontaneously drop'd off! The cicatrice formed but slowly, but is now complete, and he walks with a good deal of ease. In February 1764, I was curious enough to examine this case.

Obs. 31. Doctor Honan, a physician of eminence in Ennis, and now residing in this city of Limeric, assured me, that some years ago a woman at Ennis, by name Mary M'Nemara, had been bled in the arm for some slight inflammatory cold; and notwithstanding all the assistance that could be procured her, the mortification gained ground, and she died in five days from the accident.

XXXI. From these observations it appears, that in all cachochymic habits of body, where the aponeurosis of the biceps muscle is wounded in bleeding, a mortification may be justly apprehended; and that this mortification does really proceed from too great a relaxation of the solids, as well as want of a proper degree of circulation in the fluids-----Of consequence,

quence, that what will help to quicken the motion of the one, as well as restore activity and elasticity to the other, are the rational methods of cure ---- It is on this account that, upon mature deliberation, I condemn bleeding, except upon some very urgent or unforeseen occasion in disorders of this class; though it appears that I have made use of it in the two first cases of this chapter. But a collection of cases alone are of little consequence to the public, if the author does not at his cooler hours peruse, and then form a judgement, as to the motives of such practice, and accordingly reject or continue it. Tho' I therefore reject bleeding in these cases, as rather weakening nature than assisting us; yet I would recommend warm active purges, one or two, according to the indications; such as tincture of fenna, or hiæra picra, quickened with a little tincture of jallap, to which may be added spirits of lavender. These, by throwing off a great deal of cold, pituitous matter, must rather invigorate nature. The spirits are likewise to be supported with strong and seasoned broths, wine, with a bit of toast, jellies, &c. In the mean time the parts should be often  
fomented



fomented with stupes of the discutient kind, warm and active poultices and embrocations; and also, where the case requires it, profound incisions; but, always regarding the direction of the muscles. I cannot, nevertheless, help observing, that though the bark is generally deemed dangerous, where there is a quick pulse and fever, which both were remarkably in the 28th case, yet that it there caused no bad symptoms; nay, probably helped to make both subside.

## C H A P. IX.

*Of Mortification proceeding from a Cancerous  
Disposition of the Body.*

As a PROOF of the

*Great Respect and Esteem of the AUTHOR,*

INSCRIBED TO

DANIEL WEBB, *Esq;*

*Of Baille Bhean Oge, in the County of LIMERICK;*

*The UNIVERSAL SCHOLAR,*

*The ELEGANT WRITER,*

*And the POLITE GENTLEMAN.*

XXXII. **V**ARIOUS are the opinions of authors as to the nature of cancers. The antients, from their livid or brown colour, supposed them to proceed from too great an aduſtion of the blood and humors. Others from an acid ferment, which in time becomes corroſive as aqua fortis, and thus burns up the parts. It has alſo been ſuppoſed a real animal, which rends and tears the parts; hence its name----- More modern diſcoverers affirm this diſorder to proceed from

from animalculæ floating in the air, which attach themselves to particular parts, and by their acrimony to give rise to this malady. Gendron, a physician of Montpellier, in a little treatise he wrote on this disease, affirms, that it is caused from the nervous, glandular and lymphatic vessels ceasing to perform their functions --- this obstruction determines a greater flux of humors here; hence pain, discoloration, swelling, &c. But at once quitting these speculative gentlemen, who, Icarus like, soar too high, and would willingly explain causes, without being sufficiently acquainted with effects: let us propose to our brethren a more painful and laborious way, in truth, to acquire reputation, but a more permanent one to ourselves, and more profitable to the public ---- namely, from symptoms and effects, to *creep up* to causes. To this end I shall here present an honest recital of such instances of this disorder in the extremities as fell under my inspection, which I am not without hopes may be useful to others, as they have been profitable to myself, and may be the means of saving some lives.



XXXIII. It appears to me that cancerous disorders of the glands differ in a great measure from these which attack the extremities. I do not here pretend to investigate the cause of these complaints: I resolve them all into a kind of previous disposition, or consent of the parts; and on this occasion, for want of a better of my own, shall adopt the philosophy of Mr. POPE, who explains my meaning in the following lines.

“ As man, *perhaps*, the moment of his  
“ breath,

“ Receives the lurking principles of  
“ death:

“ The young disease, that must subdue  
“ at length,

“ Grows with his growth, and strength-  
“ ens with his strength.”

In fact, I have radically extirpated more than three terrible cancered breasts; and though the patients have recovered, as it were from death, with surprizing expedition, yet have I been witness of the cicatrice's bursting out again in twelve, fifteen, or eighteen months, spreading to the axilla, and, in fine, destroying the  
sick.

sick. A very large cancer of the tongue (which I still preserve) I have also extirpated, with a like return; many on the lips, two on the penis, of which one died, but the other got a cure. Not so in cancers of the extremities; since of four, whose cases I am going to describe, they were all completely cured, without the least return.

Obs. 32. Mr. L----, a wealthy and reputable farmer, about 65 years of age, of a strong habit of body, and healthy constitution, had, for many years, a wart on the middle of the second phalanx of the thumb, which, for a long time, gave him no trouble. However, some time in the year 1755, he, by some accident, hurt it, and it grew from that time very painful, which was increased by the slightest touch. The year following it grew much worse: bled often; and sometimes discharged a bloody ichor.---By advice in the country he drank, for thirty days, the sweetning woods; living all that time chiefly on dry, brown bread, and a weaker decoction for his common drink. He then had recourse to strong purges, but with little advantage, and the sore began to spread.---

spread.---In the Spring 1757, he again began a course of the woods, with the former restrictions, and repeated them the Autumn following. All these not answering, he sent for a woman to the county of Tipperary, famous for a secret in curing cancers, and she applied a caustic to the part in February 1758, which was to continue on for three weeks, or 'till it fell off. Hearing a good deal of this secret, I, with difficulty, procured it, and it is as follows:

“ Take crows-foot an handful; dog-  
“ fennel three sprigs; crude sulphur, white  
“ arsenic, of each a large spoonful, in  
“ fine powder; let them be well beat in a  
“ mortar, and formed into balls; one or  
“ two of these powder'd are to be mix'd  
“ with the yolk of an egg, spread on a  
“ bladder, and applied so as to cover the  
“ fore.”

This is certainly the famous secret by which Helvetius made so much money in Paris, at least the effects are the same. Though the application of this medicine gave him great pain, and swelled his hand considerably; yet, in three weeks end, the wart, which had many roots, came intirely off with the plaister. He found himself



himself much easier, but his sore was increased to the breadth of an half crown. In a few days it became very painful, and he was again prevailed upon to repeat the decoction of the woods. Nothing better in April, he sent for a surgeon of this city; and in the beginning of May for me. The sore spread lower, towards the head of the third phalanx, was very florid and painful, and yet the discharge seemed laudable matter. Here I had the preceding detail; and from the whole collected sufficient to convince me, that the disease was materially in the mass of blood. I candidly told him, that it was not in the power of surgery alone to heal this sore, which was what he wanted, without having recourse to internals; and recommended him to take the advice of physicians upon it. The man, who was an honest Irishman, could not comprehend why the assistance of a physician should be necessary to heal a sore, the immediate business of a surgeon. My advice was not relished; and he concluded that I was not so knowing as he was informed, or that I had a mind to make a patient of him. In June, hearing a physician, from a neighbouring county, to be  
at

at the races of Rathkeal, he sent for him. The month following he sent for another surgeon, from whose abilities he formed great expectations. He took inwardly the Plumber's Pill, of the Medical Essays of Edinburgh, for six weeks, with very little success. Fatigued with so many courses, he began to entertain a more favorable opinion of me. However, at the desire of his surgeon, and an eminent physician of this city, he came to town, where he staid a month, but gained nothing. His hand grew daily worse, his appetite lessened, and very little sleep. He returned home, melancholly and disappointed. January 27, 1759, I was again sent for; and so often deceived in his expectations, he was now resolved to follow any advice I should give. He was much altered since I saw him last. The sore now reached the carpus: all the phalanges of the thumb had fallen off one after the other; all the bones of the metacarpus were affected, and all the fingers were quite crooked and useless. An inexpressibly foetid, acid humor discharged, and the fore arm was discolored beyond the olecrane process of the cubitus. A piercing, shooting pain continued

tinued from four in the afternoon, till the same hour next day, when he generally got ease, and some sleep. This pain was from the elbow to the fore, and, sometimes, to the shoulder. He, for the last three months, had a constant head-ach and reeling, so that the lightest motion in the floor gave him pain. I told him, I would do my utmost to serve him: that all I could hope for was, by putting his blood into such a condition as to resist the malignity of the cancerous matter, when, I flattered myself, taking off the arm might recover him. On this principle I ordered powders of levigated crude antimony, and calomel, with a small quantity of resin of jallap, of which he took a paper night and morning, with half a pint of a decoction of guajaic. sarfa, and the bark: for a common drink, I allowed him cyder, of which he was fond, and which I judged an excellent antiseptic. These powders opened him about twice a day; and in the course of ten days he grew surprizingly better; his head-ach quitting him, his appetite returning, the shooting pain lessened, and he could get up and attend his business, which he was a long time incapable of.

P

When



When he had continued this course a month, he thought he had little more to do, expecting the sore would heal every day. I thought myself obliged to undeceive him, and judged the time proper to take off his arm near at hand. I told him, I should deem myself guilty of a great crime, if I did not thoroughly discharge my duty to him, as well as mankind. That the necessity of his losing his arm was so obvious, that it admitted of no doubt: however, in a case of this consequence, advised him to hear more opinions, and separately. He accordingly at one time sent for the deceased surgeon Vandelure; at another, for doctor Martin; then for the late doctor Nihill; and each agreed on the absolute necessity of the operation. Thus informed, he sent me word, that he was ready to submit to the operation, and desired me to bring what assistance I thought necessary. - March 27, doctor Martin, surgeon Vandelure, and I, went to Croom; and that day I took off the arm near the shoulder. He supported the operation with amazing intrepidity, and it was over, and he in bed, in a very short time, though I used the double incision.

cision. I opened it the fourth day: every thing went on well; and I quitted him the 14th of April, when the whole sore was reduced to the breadth of half a crown, the stitches drop'd off, and he up every day for ten days before; so much does depend on the manner of dressing and preserving the skin. I desired the sore not to be opened above once in three days, and then dressed with dry lint only, and never to take off any of the former lint, if it seemed to adhere. The wound was cicatrized by the first of May. It was extraordinary to see the visible and speedy effects the cutting off this offending part had over the whole body. It was not off an hour, when he fell into a profound sleep, which continued some hours: his spirits returned, his countenance cleared, and from pale and extenuated, to the last degree, as he was, I left him, even in them eighteen days, plump and florid; and in the June following he appeared in town, fatter and fresher than he had been known for five years before. I have been very minute in describing the different methods he went through, as he certainly got a radical cure; and that by

seeing, in a concise manner, the whole, one could better judge from which, or if from all, the cure was effected.

Obs. 33. Eleanor Jones, about 40 years old, of a good constitution, and always regular, was in March 1756 seized with a violent itching in the little toe, so as by rubbing to become very troublesome: the parts swelled, grew sorer, and in some time the same itching came into the next toe. From the first arose a little warty swelling, which was rubbed with blue vitriol: this inflamed the parts, and they became very sore: I believe real want might also assist to heighten the bad leaven. The soreness and swelling increased with violent pain, and by degrees seized all the toes. She now walked with difficulty. Some physic she took for this complaint, but to no effect; and it came to such a height that, for about two years before she applied to me, she went on a barrow. In July 1761, she was brought to town, and applied to me. I found all the toes, as well as the bones of the metatarsus, completely destroyed. A large, a monstrous warty swelling, rose from the tarsus, which discharged a bloody water,  
of



of a vile scent. She was prodigiously extenuated, with loss of appetite, and a very strong hectic. All these were unpromising symptoms; besides which, she had a piercing pain up her leg and thigh, which in a manner deprived her of all rest, except catching little naps at times. Add to this, that in the middle and internal part of the calf of the diseased leg there was a considerable swelling and tumor. Tho' I despaired of her cure, yet I was determined to give her such a chance as the nature of her disease would admit. As she was poor, I had her admitted into the hospital of this city; and as her case would admit of no delay, after a little physic, the 20th of July, in the presence of a good number of the faculty, I amputated the leg. Upon opening it the third day, I found the stump completely black, without the least inflammation or pain. I dressed it up hastily, and had brandy warm constantly bathing it; and she took inwardly the bark to half a drachm every two hours, in wine whey. That night she took a paregoric, composed of a decoction of the bark, with *tinct. thebaic.* and *elix. vitriol.* She passed a tolerable

lerable good night, and sweated a good deal; it was warm. The sores were not opened next day, but stuped, and the bark continued. The third day a kind of matter appeared. As her stomach was weak, she now took the bark in decoction, with *elix. vitriol.* In a word, all blackness gradually disappeared, and in a short time she recovered surprizingly, contrary to all expectation.

Obs. 34. Ellen Kieffe was some time ago admitted into our hospital for a large cancerous excrescence, extending from the second phalanx of the thumb, to the wrist. A hurt she received, about six years prior to her admission to the house, gave rise to this frightful and disagreeable tumor. From the moment of her receiving the hurt, she never was quit of pain, more or less, or swelling in the part. She took now and then physic, and little innocent applications to the part, to lessen the pain and swelling; but a second hurt, received in the same part, inflamed the symptoms. The swelling increased: the parts became ulcerated with a discharge of a reddish water;

ter; and a quick pulse, and constant pain, reduced her considerably. This was her situation when received into the hospital. Upon consultation, it was agreed to take off the fore arm, as the only probable means of restoring her health: and with very little preparations, save a couple of doses of physic, was the operation performed. In a short time after the operation, the quickness of the pulse lessened: the symptoms sensibly abated; and she was completely cured in a short time, and enjoys good health, though sixty years old.

XXXIV. From these few cases, thus faithfully narrated, what inductions are we to make? Are we to account cancers of the extremities local, or universal? By the case of L----- it would seem that they are universal; and yet, by the two succeeding ones, there is a strong presumption, that they are merely local. The preparations which are judged indispensably necessary in these disorders, were not here admissible: the symptoms were too pressing to admit of any delay. The two patients must have inevitably died in a very few days, had this *only chance* been inhumanly



humanly refused them; and by giving it, they have surprizingly, and I may say, amazingly recovered. But if we suppose cancers of the limbs to be really local, how account for their spreading? for the intense pain they give? and for the amazing ravages they commit? insomuch as to consume and form into a cancerous mass, the substance of flesh, blood-vessels, tendons, and even bones too! Again, if we admit the roots of the disorder to be materially in the blood and juices, how shall we explain the pain, fever, and every other concomitant symptom of this disorder, soon subsiding, on removing the lesed parts? In my apprehension, we must not, from the premisses, draw too hasty conclusions, but submit the decision of this interesting affair to a more numerous collection of experiments. This *one* useful inference, I think, we may from the whole safely make: That is, in very desperate cases of this kind; never to refuse our assistance, nor decline amputation, as the successes here related are sufficient to justify this practice; and which the following case, which traces the infancy

fancy and first symptoms of this disease, abundantly confirm.

Obf. 35. Phillis Wolfe, a poor girl, of about 25 years of age, of a phlegmatic habit, and not very regular, in May 1761, began to complain, and apply to many for advice. Her disorder proceeded from a violent itching in the little toe, which by frequent rubbing, became extremely sore and painful, so as to disable her from bread. She took from time to time physic, and a variety of applications to the part, to no visible advantage. In some time after, I admitted her into our hospital. The toe was swelled, very red, and quite deformed, with a thin ichorous discharge, and the metatarsal bone underneath very much inflamed. Having perused Mr. Stork's pamphlet on the cicuta in these disorders, we were determined here to give it fair play. She began with a pill night and morning; and which was gradually increased to ten and twelve in a day. During the long period of five months, that she constantly took this medicine, the sore was constantly bathed, every day, with a decoction of hemlock, and dressed, at one time with dry lint, at another,

Q

with

with cerate, basilicon, mercurial ointment, &c. but without the least visible amendment, though she did not grow worse. Recourse was now had to a mercurial ptialism, but with no better success. It was then resolved to take off the affected parts above the bone of the metatarsus; but her entreaties for the present prevented it. She was now put under a course of steel pills, and other deobstruents; and no way mended, even by this course, the affected parts were at length taken off, and in some time after she got her cure, and now follows her usual employ in this-city.

XXXV. The remark which I made from time to time on this case, may help us to form a better judgement of the nature and cure of this disorder. First, the variety of powerful remedies she took; not crowded upon one another, but giving to each its full play, must, I think, convince us, as well as case 32, that disorders of this class are scarce curable by internals. She took the hemloc in so large doses as 20 grains a day, without any sensible effect, except making her head giddy; and I have tried it, in a variety of cases, with no greater success.



success. She went through a six weeks course of mercury to no better effect. As to the sore, during this long period, whenever it discharged plentifully, it looked better, and she was visibly easier, whether she took internals or no. If dressed two or three days in succession with dry lint, cerate, or any absorbent, though at this time her medicines should be of the most powerful kind, still, if the discharge became lessened, which was generally the case, the pain and inflammation increased ----- A demonstration that these internals were of little, if any real advantage.

## C H A P. X.

*Of Disorders of the Bones, that require Amputation.*

With great RESPECT and sincere ESTEEM

PRESENTED TO

Colonel AUGUSTIN FITZGERALD,

OF SIX MILE BRIDGE, in the County of CLARE,

A N D

*One of the Deputy Governors of said County.*

XXXVI. **W**E may safely affirm, since experience proves it, that there is some particular idiosyncrasy that determines disorders to different seats. As a slight wound or hurt, in some constitutions, will bring on mortification, so *here*, a bruise or hurt, equally insignificant, will bring on a similar disorder of the solids. But as, in the first instance, there is a previous disposition in the fluids which disposes them, on every occasion, to manifest their malignity; so in the present case a like malignity is lurking in the bones,

bones, which is ever ready to prove itself. But though vices of the fluids are generally and mostly attended with very alarming symptoms with regard to life, yet in diseases of the solids they are seldom attended with a like danger, though at best the cure is very tedious, even where the greatest attention is paid to the case.

XXXVII. This vice of the solids, like that of the fluids, appears to run thro' the whole osseous system; and wherever a part is affected, there the whole malignity falls. And yet from our knowledge of anatomy and the animal œconomy, it seems to me extremely difficult, if not absolutely impossible, rationally to explain, how bones, distinct from each other, and from which it would be highly absurd to suppose any osseous communication can convey a general vice to a particular part? But that such is the case, the following conclusive observation proves. For we know that a very slight hurt in a particular part, will often bring on a caries of the bone, and large exfoliations ensue; whilst a very considerable one soon after happening in other parts, will be productive of no bad consequence. It may  
be



be said, that this only proves the disposition to be fix'd originally to this particular part; and that exostosis and caries often appear without any manifest cause. But I have been inquisitive enough to enquire of many sick, in whom caries have followed accidents, if they found any particular weakness or tenderness in that part, previous to such attack, and have often been assured that they did not. Besides, in many cases, particularly in Qbf. 37. the strong and fetid smell proved the vice to be general, and which was removed with the disorder. And as for spontaneous caries, they prove as much for one side as the other; but from this sketch of theory, which may not be totally useless.

XXXVIII. Of all disorders of surgery, none requires greater patience, on the sides both of the surgeon and patient, than these of the bones. And if the patient seems otherwise in a good habit of body, has a good pulse and appetite, we boldly affirm, that caries of the bones, however extended and deep, provided they are not accompanied with large ulcers, may be cured, without coming to the disagreeable method.

method of amputation. It is true an attempt of this kind, is mostly the work of a long day: but the preservation of a limb, often of the life of the patient, by that means, is an object well worthy of this trouble. To prove the truth of this assertion, and to deter both the surgeon and patient from such extremes, I shall here single out a few, from a vast variety of cases of this kind, that fell under my inspection.

Obs. 36. One Ryan, a fisherman, about 25 years of age, of a robust constitution, some years ago received a hurt on the left fore arm. A fix'd pain became formed there: it swelled, and formed a fistulous sore, out of which small splints of bone, in some time, came away. It then healed, and again broke out in two different places. In March 1762 he came recommended to our hospital. The radius seemed swelled, and the integuments inflamed near four inches in length; and at each extremity of this sore was a fistulous sinus, which, upon narrow inspection, seemed to communicate. The two openings were brought into one channel, the hard, fistulous flesh was cut out, and a pretty

pretty smart hemorrhage ensued. For the first time the cavity was stuffed with dry lint. The succeeding dressings were of tincture of myrrh and euphorbium, and driers of this kind, till a piece of the radius, of about two inches long, and pretty thick, came away. He then went through a course of mercury and the woods; and during this process several more splints became detached. He was at the end of two months discharged, but continued an extern for above three months longer before he got a complete cure.

Obs. 37. One M-----, a poor school-master, hurted his elbow, at the olecrane process of the cubitus, which inflamed and grew very painful. An abscess of a fiery red color was formed and broke, but the discharge was a thin ichor, of a bloody color. He made use of a variety of medicines in the country; and at length, fatigued and impoverished, in about eight months after, he came to our hospital. The bone was bare more than the breadth of a crown piece, was soft, moist, and spongy; and, by the appearance of the flesh, was diseased above  
two



two inches further. He was very weak and pale, and his breath highly fetid. The discolored flesh was cut away; and to the diseased bone the actual cautery was applied twice a week, the adjacent parts being first defended by lint; and at other days the sore was dressed with tincture of myrrh and euphorbium. He was also supported with good nourishing broaths, light meats, &c. and he took the alterative mercurial pill, with a strong decoction of the woods, but with very little visible effect, except that the caries became more of the dry kind, and that his strength and constitution were greatly mended. He after this went to the country, and in about five months after came to see me, quite recovered, and his arm sound. He told me, that it was a constant use of the sweetening woods on lime-water, with the usual dressings, that got him his cure: though it seems more than probable, that the foundation of it had been laid at the hospital.

Obs. 38. Margaret M'Donnell, about 16 years of age, fresh colored, and healthy looking, in January 1761 was admitted into the hospital for a caries of the tibia.

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About three years before, she hurted her leg near the knee. The part became very painful: a tumor was there formed, and in some time broke. A thin sanies discharged, and little care was taken of it. In some time the hole became profound, and a second was formed in the middle of the leg, and a third near the malleolus internus. The upper orifice became greatly enlarged; and when we first examined her, part of the tibia could be seen bare and discolored; and, on pressing with a probe, seemingly loose. An opening was made, from the first to the second sinus, or to that in the middle of the leg, and by sponge tents kept so. The loose part of the tibia was stirred from day to day, and the sore dressed with tincture of myrrh, sometimes with the addition of sp. sal ammoniac. She took inwardly preparations of mercury in various shapes; but it seemed to assist very little in throwing off the exfoliation. Poultices of oatmeal, and grounds of beer, or lees of wine, were often applied; which, though they here seemed to answer no great end, yet I have known them, in other cases of this class, to be very useful. To as little purpose

pose were, at other times, poultices of roasted parsnips used. However, with great attention, in about three months from her reception, that part of the tibia which had been loose, extending to the middle of the leg, came away. It was very thick in the centre, but more scaly towards its extremities, and measured four inches. This, with many other considerable exfoliations, I have bye me. A second exfoliation, in a considerable time after, of the remainder of this part, was thrown off. But she continued for above ten months a patient before she got a complete cure: and even now the appearance of this leg is odd enough, it seeming to form a kind of curbure in the internal part of the leg, from whence these considerable separations came, and the bone itself, seeming to bear no proportion to that of the other, whilst on the outside it seems straight enough, and to be as strong as the other, though more tender.

XXXIX. It is, indeed, profound ulcers, of very long standing, with caries of the bones and anchylosis, and caries of the bones of the tarsus and inferior condyles of the femur, that seem to baffle the skill,



and tire the patience of the surgeon and of the patient, and to give way to nothing but amputation. But before recourse is had to such severe means, every other method should first be tried. As then these complaints may be justly deemed mortifications of the solids, whatever may help to stimulate the parts, and assist nature in throwing off the malignity, are certainly the rational methods of cure. To this purpose stupes of the discutient and active kind, poultices of oatmeal and stale beer, lees of wine, or first run of whisky; others of old parsnips roasted, and beat into a smooth poultice, with sp. sal ammon. sometimes even that of mustard, garlic and vinegar, may be tried. The fistulæ, or sinus's, if any, may be injected from day to day with some warm, deterfive injections----- *E. G. aq. bord. mel. rosar. & tinct. myrrhæ* --- the internals may be mercurial purges, the alterative mercurial pill, with the woods on lime-water; and, sometimes, a mercurial (but a gentle) ptyalism has been found efficacious.

Obs. 39. It was by such means that one Donoghoe, for many years afflicted with an exostosis and caries of the bones of the  
tarsus

tarsus of the left leg, with a fistulous fore pervading these bones, was restored to the use of this limb. The fistula healed, the swelling became considerably abated, and he had strength enough in the limb to follow his usual occupation of portering, but at times only.

XL. But where these means have been unsuccessfully used, and the ulcer and caries still continue obstinate, or the ankylosis and caries of the tarsus are no way mended, with a darting pain shooting up the tibia: that, in both instances, the leg is in a manner useless; and the constant pain and discharge weakening the patient; it is, in this case, manifest there is no other alterative, but a perpetual lameness and pain, by continuing the limb on, or health and vigor, by the taking it off. For it is pretty remarkable, that amputations under these predicaments, are mostly successful: more especially, as in our method the advantages deriving to the patient, are infinitely greater than those in the common manner of amputation. But as nothing carries greater conviction, than example as well

well as precept, here follows some instances in both cases.

Obs. 40. One M'Guire, a poor man, in the summer of 1756, received a violent hurt in the right ankle, with a considerable wound, by the fall of a very large stone. For want of proper care, in the beginning, probably heightened by a bad habit, and want of proper nourishment, the sore grew very bad; and in this situation, some one requested I would visit him. Instead of a considerable wound, as it was in the beginning, I found the bones of the tarsus greatly swelled, with a couple of fistulous sores, freely pervading the bones; and the passage of my probe soon informed me, that these last were in a mortified state. In vain were warm, discutient fomentations, active poultices, and detensive injections used externally, as well as the bark administered inwardly; for his relaxed state would not admit of the evacuations recommended in section XXXIX. He continued thus for about five weeks, little mended. I then recommended warmly to him amputation (being a young man) as the only relief, which he would not hear to. I nevertheless saw him, at times, for  
about



about two months more. From this time I heard no more of him for some weeks; till he was one day brought to my house on a barrow, much emaciated, and the fleshy part of the diseased leg greatly diminished, but the swelling of the ankle was no way abated, though the fistula were dried up. In some days after I took off this limb: the bones of the tarsus were quite rotten, as was the inferior part of the tibia and fistula, connected with them, but not in so remarkable a degree as the tarsal bones; as I could run my knife, with the greatest facility, through every part of these last. The fore healed kindly, and the man's appetite, complexion and strength, soon became restored.

Obs. 41. Francis Kennelly, the first person I amputated in the new manner, and whose case has already made so much noise, was admitted into our hospital in November 1761. This man was about 60 years old, of a delicate constitution, and fallow complexion, and had long labored under an exostosis and caries of the bones of the tarsus; but which, for about six months prior to this date, were  
attended

attended with very severe pain, from the diseased part to the head of the tibia, so as to render him in a manner incapable of any kind of exercise, which he before performed with the assistance of two sticks. He had not any sore on the part. Upon mature deliberation, amputation was resolved upon, which he joyfully accepted. As this seemed a favourable subject to perform my new operation on, so long premeditated, I was determined not to let it slip. But to avoid any imputation of clandestine dealing, I acquainted all the faculty, as well as some other gentlemen, of my intentions, some days before hand. Accordingly, November 27, in the presence of several gentlemen, I took off this limb, in the manner hereafter to be described. The case happened to be a much worse one than I imagined: a smart hemorrhagy ensued; and the smallest ramifications poured forth blood rapidly, on account of the thinness and dissolved state of this man's blood. Notwithstanding all my care, a fresh bleeding came on the fourth day from the operation, and again the fifth! He, however, took the bark in substance, with the elix. of

of vitriol, in a decoction of *cort. granator. cinamom. aurant. & rad. gent.* on common water; and every night about 25 drops of the tinct. thebaic. to inspissate the blood and juices. But notwithstanding these unfavorable appearances, the sore soon after digested kindly: the flap was firmly united the 14th day, and he was soon after discharged completely cured, and to this day enjoys an health and vigor he had not for many years before.

Obs. 42. A poor woman at Bruff, about twelve miles from this city, seemingly of a good constitution, and about 40 years of age, had labored for about 14 years under a large and profound ulcer of the tibia, with caries of the bone. After trying every assistance the country could afford, and greatly impoverished, she was at length recommended to our hospital by lady Hartstonge. She was there treated very carefully, and every means tried to recover her leg, except amputation, which she would not consent to, and therefore was at length discharged. After remaining at home for a considerable time, greatly emaciated, and her leg much worse, and unable to come to town, she

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petitioned



petitioned the above lady to send out a surgeon to perform this operation, and this task she requested I would undertake. I took off this leg in June 1763, and left her in the care of a man there, who this lady allows a small stipend to for attending the poor in that neighbourhood. The cure went on very favorably; and she soon recovered strength and vigor, and has since enjoyed good health, as said man informs me.

XLI. From the recited cases, and from the nature of these complaints, being mostly original vices of the solids themselves, it is manifest that where they have subsisted for a considerable time, and that any general vices of the parts are here determined: it is manifest, I say, that they should be deemed, and really are, local; and that where the general method of cure described has failed, amputation may, with the highest confidence, and greatest certainty of success, be undertaken. Nevertheless I shall here present you with a very interesting case, by which it appears, that leaving the least remains of the lesed parts on, is of fatal consequence to the patient. We know that the

recital

recital of unsuccessful cases, is often of greater consequence to the public, than that of successful ones ---- They serve as becons to warn succeeding practitioners from similar perils.

Obs. 43. Margaret Callinan, a poor woman of a robust constitution, aged about fifty, had been, for very many years, troubled with a large and profound ulcer of the tibia, with a caries of the bone. It broke out in a variety of different places, on the extent of this bone, from the knee to the ankle, as appeared by the cicatrices, and the nodes, particularly from the knee to the present fore, which reached from about five inches from this place to the ankle, forming a very profound cavern. This leg was taken off in our hospital, near the border of the fore, and upon these old nodes. My opinion was, that, in order to ensure a cure, and to be certain of leaving no remains of the leaven behind, it should be taken off above the knee. The second time of opening, the extremity of the tibia looked black; the fore was extremely painful, never digested, and a fever seized her, which in the course of eight days from

the operation, carried her off, in spite of all remedies, and to a very strong constitution! Hence it appears, that tho' these disorders may be deemed, in general, local; yet, in order to insure success in amputation, we would be very careful to remove all the vitiated parts in the operation.

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## C H A P.



C H A P. XI.

*Of Gangrene from External Causes: And first, of the Manner of treating that proceeding from intense Cold and Frost.*

P R E S E N T E D

With Great D E F E R E N C E to

E Z E K I E L N E S B I T, M. D.

O F T H E

K I N G and Q U E E N ' S C O L L E G E o f P H Y S I C I A N S,  
D U B L I N .

XLII. **T**H E power and effects of cold, considered either philosophically, or medically, are truly great. But whether there be a *primum frigidum*, or first principle of cold, as many ancient philosophers supposed, and which Plutarch places in the earth, the Peripatetics in water, and the Stoics in air, or a *summum frigidum*, is a question not admissible in a treatise on surgery, which justly (and happily for mankind) rejects all enquiries into first causes, content with tracing and confining themselves to effects only. We  
know

know that frost and intense cold are the greatest preservers from putrefaction and contagion; and that dead bodies have been found intire and unaltered for many years, on the Andes, those monstrous mountains of America, Josephus d'Acosta testifies. Mr. Ellis, in his account of the North-West passage, found unsalted provisions keep fresh for some months: and ancient and modern observations prove, that nothing gives a speedier check to the spreading of contagious disorders, than cold or frosty weather supervening.

XLIII. But whilst we contemplate these amazing effects of cold on inanimate bodies, it will be no less curious to observe its action on animate ones. Whilst the first are by it preserved pure and intire, the last are soon disposed to corruption and dissolution! Mr. Ellis, in the above work, relates strange stories of fingers and toes, &c. becoming mortified, in a very short time, from intense cold; and Mr. Walker, in his account of lord Anson's expedition, tells us, that in going round Cape Horn, amongst other effects produced by the cold, that wounds many years healed, broke out fresh; and that even the callus  
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of broken bones became dissolved! But shall we be surprized at this, when we also learn, from Ellis, that strong spirits became soon froze by the cold? However, such is the wonderful structure and make of man, that the same body becomes, by a little caution, capable of sustaining unshaken extreme degrees of heat and cold. By a man's washing in snow of a morning, how little sensible is he of the intenseness of the cold; and by action, how strongly does the innate heat glow?

XLIV. But if the violence of the cold is so great, as fairly to coagulate the blood and destroy the native heat, as we certainly know it sometimes is, since we hear every winter of people froze to death, so near home to us as England; and since a particular friend of mine has assured me, that he has, more than once, seen waggoners coming into Moscow, erect in their carriages, tho' dead with the cold; in this case, what is to be done? It is an established custom, in most northern countries, when a limb becomes mortified by frost, instead of hot applications, to cover the part with snow, which being a less degree of cold, gradually and insensibly dissolves  
and



and dissipates the coagulation, and restores the circulation. The justness of this practice seems more confirmed by the management of frosted apples; for if they are laid before the fire, in order to be thawed, they loose all taste, become soon corrupted, and transformed into a soft pulp; but on the contrary, if laid in cold water, the icy spiculæ are gradually drawn from the centre of the fruit, their surface becomes frosted over. Let them be again immersed in fresh cold water, more of the spiculæ will again appear; and by repeating this operation, till all the frosty matter becomes extracted, they recover their usual flavor. And it is proved, beyond a possibility of contradiction, by Hildanus. In his large work in folio, cap. 13. de Gangrænâ & Sphacelo, he relates the case of a traveller, brought to an inn, rigid with cold, and as it were dead. The landlord had him immediately immersed in cold water, by which the frosty matter was so strongly attracted, that the surface of his body seemed covered with a coat of ice. After this, a large quantity of hydromel was given him, together with powder of cinnamon, mace, and cloves, which brought  
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on a plentiful sweat; and he recovered, but with the loss of the last articulation of all his fingers and toes! The remarkable case from Vienna, in January 1763, and published in most of the Gazettes of Europe, though by many treated as fabulous, seems to me highly probable. An officer, in travelling from Dresden to Vienna this winter, met with such severe weather, that his servant was froze to death on the road, and there left. A violent fall of snow coming on soon after, so as to cover the body, gradually and insensibly attracted the icy spiculæ to the surface: a small ebbing and flowing of the blood commenced. More of the frosty matter became extracted, and the course of the blood became less interrupted; and in three days after his master's arrival at Vienna, to his great astonishment, his servant appeared!

XLV. In our hospitable and happy climate of Ireland, where we are absolute strangers to extreme heat or cold, we can *experimentally* know but little of the terrible ravages and effects of cold; however, by observing what happens to boys and children, whose hands or feet are be-

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numbed

numbed with cold of a winter's morning, we will see in miniature the justness of the practice proposed in the above section at large: for by too hasty approaching the fire, acute pain succeeds the cold, and the parts become often blistered and sore; whereas those who keep from it, or put their hands in cold water till the numbness goes off, find no such inconvenience.

Obs. 45. About 22 years ago, then very young, in a passage from Dublin to Chester, we met with a most violent storm, and after beating the sea for three days, we were at length driven into Milford Haven. Being naturally tender, and lying in a cabin all this time, unable to keep any thing on my stomach, my legs became so swelled with cold, that when we were preparing to land, I found myself unable to stand, yet I had no pain. I was carried into the boat, and from thence to my lodgings, when I begged to lie down; and, after an hour's refreshing sleep, awoke, but with exquisite pain. My legs were then examined, and appeared quite oedematous and cold, particularly my left, which, from the ankle down, was greatly discolored. Warm stupes were prepared, but



but the heat of these augmented the anguish and darting pain in the parts. I continued for some days in great misery, when the formation of several black, watery blisters procured some relief, and it was suspected I should loose the left leg. However, the force of constitution, and some purging phyfic, with the stupes, restored me by degrees; but it was three months from the accident before I recovered the intire use of the part. And the big toe of the left foot was black and insensible for some time longer; insomuch that I have kept it, at times, so close to a fire, and so long, that water as clear as chrystal has transeceded. *transuded*

XLVI. In fact, nature seems to shew an abhorrence to extremes. And if, instead of a warm bed, active stupes, and strong whey, the extremities had been kept covered with cloaths wet in cold water, and often repeated, till the insensibility and numbness lessened, or intirely disappeared, in all appearance I should save a great deal of pain to myself, as well as some danger. For bodies may be said to be warm or cold, only relatively: snow, cold water, &c. compared to bodies absolutely

froze, may be accounted warm. These first applied to a benumbed part, insensibly dissolve the coagulation, and attract the icy spiculæ; whereas more active applications, like the effect of sudden heat on a frozen apple (sect. XLIV.) only dispose the parts to a speedy mortification. And this also shews why fingers and toes, the nose, &c. become soon mortified, on being suddenly exposed to very intense cold. This abhorrence of sudden extremes of heat and cold the ancients in general, particularly the Peripatetics, seemed well acquainted with; nor could they suppose them, in bodies in a natural state to exist together: hence violent heat was expelled from bodies by the *Antiperistasis* of the cold.

XLVII. In all dangerous and violent effects of sudden cold, the fire seems to me to be the last place the sick should be brought to; and warm cordials the most improper remedies. If the limbs are froze, they should be covered with snow; or, if not to be had, in cloaths wet in cold water, and often renewed. The sick should be kept very far from a fire, not even in a warm room. His drink  
should

should be light whey, lemonade, or capillaire: his food broth, gruel, or flummery; nor should they exceed the degree of heat of common warm liquors ---- His medicines ---- just nothing. For a frozen limb may be compared to a limb cut off: like it, at the sound part, the circulation is carried on by anastomosis; and, of course, the dissolving the congealed blood should be done gradually and insensibly. In some time salt water, or salt and water, should succeed to the snow, or common water. This should give place to milk and water, a little warm; and this should be followed by more active topics; whilst the nourishment and medicines keep pace to these transitions. By this means the sick will gradually and effectually recover, and avoid an immensity of pain.

XLVIII. But if, by reason of being too long exposed to intense cold, the crisis of the blood is totally destroyed in a limb; that all our endeavors to restore a circulation become useless there; and that a complete sphacelus is formed, yet still is amputation with great caution and circumspection to be attempted. Every method



method laid down, to attract the frozen matter, should be carefully pursued; and when the circulation seems pretty well established, the bark and warm cordials should be administered. But all this is not enough: the mortified parts, contiguous to the sound, must be scarified, and dressed with soft digestives. Stupes and poultices must be used; and if the incised parts discharge a well concocted pus, in some days, and the patient's spirits are good, amputation may be safely undertaken, as there is almost a certainty of its being attended with success. But if the reverse appears, then must it be, without doubt, delayed. In a word, in Gangrenes of this class, like those from inflammation, and from a vitiated habit, no possible danger can attend delaying mutilation; but every thing is to be apprehended from too hasty a resolution on this head.

## C H A P.

C H A P. XII.

*Of Wounds of the larger Vessels, which require Amputation.*

INSCRIBED,

With the most profound RESPECT,

To the Right Honorable and Honorable

THE

DUBLIN SOCIETY.

XLIX. **I**N all ages, no symptom was more alarming, both to the surgeon and patient, than a profuse hemorrhagy. To guard against this accident, a variety of means have been tried. In slight ones, the ancients (as well as many moderns) made use of strong catheterics, which, by causing an eschar, for the present damed up the blood. When the symptoms became more urgent, the actual cautery was the last resource. The dread of this, was the reason why the ancients were so unfond of performing amputation; and, of course, will well explain

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explain why they have left so little of consequence on this head. But modern surgeons, more bold, as having had the solid supports of anatomy, have found out a variety of expedients against this accident; and the consequence is, that we daily see amputation perform'd with great success.

L. In fact, if we give attention to the form of the artery being conical, by which means the force of the circulating fluid must be more and more broke, the farther it stretches from its basis, the Aorta. If we attend to the nature of the blood itself, being a viscid, gluey substance, taken together; and by analysing, appearing to be composed from a reddish phlegm, or water, impregnated with a little volatile alcali, a yellow oil, a very penetrating volatile spirit, a concrete volatile salt, a black oil, thick as pitch; and the remains a kind of charcoal matter. From these considerations, I say, we shall find, that stopping of violent hemorrhagies is not so great a mystery; and, notwithstanding the boasts of some, from experience I can affirm, that any thick, soft substance, such as the lycoperdon, or puff-ball,



ball, mosses of every kind, beat very soft, fine scraped lint, or flour, applied to the mouths of the gaping vessels, and there kept, by a gentle pressure of the finger, till they adhere to the vessels, will always stop bleedings, even after the amputation of the extremities. If the bleeding sometimes returns, in these cases it is *only* because, in dressing up the sores, these plugs have been by some means in part, if not intirely, removed. Of this M. Brossard seemed to be well aware; for he took care to see his agaric adhere to the vessels, before the stump was dressed up. And it was this attention, more than any particular virtue in the agaric, that made its application in his hands so successful; and will well explain why, when used by others, it did not, in many cases, answer so well.

LI. As then both the structure of the vessels, and the nature of the blood itself, assist us in large hemorrhagies, provided we take the proper means of promoting this kind disposition; that is, by seeing our soft, spongy, and simple applications, adhere to the mouths of the vessels; by dressing the remains of the sore with soft,

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light lint; by a gentle bandage; and by revulsion by bleeding ----- Yet where the blood becomes vitiated, altered, or too thin, it is manifest that here (*only*) our utmost attention is required. Petit, in the Memoirs of the Academy of Sciences, gives a remarkable case of a nobleman, who had like to have died the 21st day after an amputation of the thigh. The learned doctor Huxham gives instances of spontaneous hemorrhagies, from which the patients have died. In Mr. Gooch's Cases in Surgery, p. 131. you have the history of an amputation, in which violent bleedings supervened the seventh, ninth, and eleventh days, so as with difficulty to be mastered. Here indeed the vessels should be taken up; but if not easily come at, as a good deal of time may have intervened between the taking off the limb and the accident, the soft applications, already described, should be pressed to the whole stump till they adhere: the course of the larger vessels above the part, should be compressed with fine tow, or linen, rolled up smooth; and the bandage a degree tighter than in the former cases. This too great dilution of the  
blood,

blood, should also be corrected by internals, such as soft nourishing broaths, in which nettles, &c. may be boiled; balsamics, mixed with absorbents; the bark, with elix. vitrioli, and acids of the vegetable kind, such as cyder, lemon, &c. properly disposed.

LII. But it is in gun-shot wounds, where the principal arteries are wounded, such as the brachial, or femoral; or in wounds made by sharp instruments, such as small sword, sabre, &c. where the like unhappy accidents meet, that the utmost skill and coolness of a surgeon is required. In those made by fire-arms, the eschar serves as a sort of plug, till by digestion, or the too hasty use of the knife, it falls off. Here we have some time to prepare for the attack; but in incisive wounds, if we are not very adroit and expeditious, our patient----*Fundit cum sanguine vitam!* In these extremities, it is agreed upon by most writers, immediately to amputate, as the limb must wither or mortify, for want of this circulating fluid, thus cut from it, and as being also the only means left to stop the blood. Having often considered this affair, I have imagined a more



speedy relief might be found; and tho' I can hardly doubt, in these accidents, but amputation must at length become necessary, tho' we suppose the immediate apprehension (I mean the hemorrhagy) to be mastered; yet, for reasons which shall be more fully dilated in the 14th chapter, what I would propose, in these cases, is the stopping of the blood only for the present, reserving the further manœuvres to another day.

LIII. Let us now suppose a wound, either of the arm or thigh, by an incisive instrument, in which the brachial, or femoral artery is wounded; and a more melancholy case cannot be well imagined! The blood undoubtedly pours out like a cataract; and if our relief is not expeditious, the patient may speedily diè. In this case, the first object I would have in view, would be compressing the trunk of this vessel. I would immediately apply Petit's, or the common tourniquet, to the groin, or near the axilla, to stop the immediate flux of blood; and then, with the largest convex needle, armed with six or eight threads, made flat and smooth with wax, I would pierce the skin, about  
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an inch above the wound, and near the same distance from the beat of the artery, at one side; pass under the artery, and push the point of the needle out, at about half an inch distance, at the other side of the artery. The threads being thus passed, and comprehending the artery, and surrounding fat and muscular flesh, let a small roller of fine linen, not made up hard, be placed over the artery, and on this let the ligature be made; not very tight, but rather moderately so; as the swelling of the confined corpus adiposum and flesh will soon sufficiently compress the vessel, so as effectually to prevent bleeding. By this means also, convulsions may be avoided, and the very violent inflammation, which must necessarily follow the compression of so many principal vessels. Besides, we can at any time, with ease, relax or brace this ligature. It is to be noticed, that I do not here determine how deep we are to carry our needle in this new kind of ligature: this is left to the judgement of the surgeon. If he is an anatomist (without a thorough knowledge of which, severe penalties should be inflicted on any wretch, who would daringly

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ly assume this name) he must always know the directions of the principal vessels; therefore, to such, a description of this kind would be tedious and unnecessary: if not, the clearest and most striking account of this kind would be unintelligible; besides, it is for men of profession only this work is intended.

LIV. The present pressing point of danger being thus happily got over, our next attention must be with respect to the state of the wound. Let it be therefore dressed with pledgits of soft lint, covered with flour, if an hemorrhagy continues from any of the collateral branches; otherwise dry, covered with plaister, and a long, retentive bandage. After making a few turns lightly over the fore, let a strip of fine linen, lightly rolled up like a common band, reaching from the ligature to the axilla or groin, be laid over the course of the vessel; and roll here with a greater degree of tightness than over the fore; not enough to stop the circulation, but to break its force on the lesed parts. If the remains of the limb becomes numbed, insensible or cold, which probably will be the case, let hot stupes and spirituous applications



plications be used to this part. The super-abundant fever to be kept down by venesection and antiphlogistics: I distinguish between a fever and super-abundant one. The first is *absolutely necessary* in all very considerable accidents, to bring on supuration; its absence, in proper time, is rather a bad, than a good sign; but where it becomes excessive, the above remedies, and such like, are to be used.

LV. If, after all, the remainder of the limb should become livid, insensible and mortified, and that no possibility of saving it appears (and indeed it is hard to think how it should) I would still not hastily amputate, but rather make use of scarifications and fomentations for some days more, for reasons which will be more fully explained in the 14th *very interesting* chapter, and fortify the blood and juices against this operation. But I would begin my operation where the wound was originally received, except the parts above it should be mortified; and, in that case, the taking up of vessels, except collateral ones, becomes unnecessary. Here follows the only opportunities that ever offered  
to

to me, for reducing this theory to practice.

Obs. 46. In May 1760, when Montgarret-gate (an handsome piece of work, and a great ornament to that part of this city) was taking down, one of the arches suddenly gave way, and John Dean, a clothier, then standing on it, fell thorough it, and some stones fell on him, one of which made a considerable wound and fracture of the left parietal bone. I was requested to visit him; and extracted some pieces of the skull, which tore thorough the dura and pia mater. The temporal artery bled with great force; and after a strong pressure, by means of soft lint over the course of this artery, and the capulina bandage (in similar cases, an excellent resource) I left him for the present. I had not been half an hour absent, when I was entreated to visit him again. The blood forced thro' all these compressions, and flowed very copiously. After removing the dressings, and finding every other method useless, with a small convex needle, double threaded, I pierced the skin on one side of the artery, passed it under this last, and again  
out

out at the other side; and placing some loose unformed lint over the artery, I here made my ligature pretty tight. All fear of bleeding, from that moment, ceased.

Obs. 47. A gentleman of this city, in May 1762, by some accident struck his left hand through a pain of glass. A pretty considerable wound of the wrist was the consequence. The radial artery was also cut thro', and some smaller ramifications were wounded. The arteries bled very freely; and soon after I was sent for. Finding compression not answer cleverly in this case, he being a little heated with liquor, I took the resolution of making the ligature of these vessels, especially as it was after night fall. This done, the bleeding ceased, and I dressed the sores with soft lint, applying a cushion of tow to the bend of the arm, to break the force of the blood, which was secured by a proper bandage. The sore was not opened for two days after; and every thing went on in a very promising way. In about seven days the ligature dropped off; and I now recommended to him the greatest caution and temperance. He, nevertheless, made use of this hand on every occa-



sion; and as my advice was not paid the deference I imagined due to it, I insisted on being discharged, which was complied with. For it was imagined I made much more of the affair than it deserved. But though the fore healed up, yet in about three weeks after, upon some very violent effort, the radial artery ejected blood with great impetuosity; and I was again, with many entreaties, requested to visit him. I clapped a good deal of lycoperdon on this part, which I pressed on with my finger, over this a good deal of soft unformed lint, a compress over the artery, and secured the whole by a straight bandage; and, as the pulse was very full, took some blood from the other arm. Things remained thus for about five days; when, upon some excess, a fresh hemorrhagy came on, which was again mastered. In two days more, it began again; on which I had Mr. Mahony, a good operator and surgeon, called in. The following morning it came on very violently; and, apprehensive that such frequent relapses would endanger his life, amputation became seriously thought of. I, however, told them, I had one means more  
unat-

unattempted, before we should come to this disagreeable necessity; and the next day I had full occasion to put it to trial. For, on some very slight motion of the hand, it bled with great profusion, and I was sent for. In this situation, in the presence of the other surgeon, &c. I passed a convex needle, armed with three threads, smooth, flat, and well waxed, about three fourths of an inch higher up than the gaping orifice of the artery, and at some distance from this vessel; pierced the skin and fat, conveyed my needle under it, and again out at the other side of the artery; put some lint, between the spaces of the wounds, over the artery, and on this made a pretty tight ligature. All bleeding immediately ceased; the orifice of the artery soon healed; the skin became firm over this part; in about a fortnight after, the ligature cast off; and he now has the use of that hand as firm as the other. Thus by a new, and truly curious operation, was a limb preserved; and will, I hope, be the means of saving many others in similar accidents. Had such a method been taken in the following case, a poor man might have preserved his arm.

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Obs. 48. The butler to a gentleman at some distance from this city, about ten years past, in wiping a glass, it happened to break, by which accident he received a considerable wound of the wrist, in which the radial artery was divided. It bled violently, and with some difficulty was it mastered by Mr. White, an ancient surgeon here. The bleeding returned in two days --- again in five; and thus continued bursting forth at times, on the least motion of the hand, for near a month. This great loss of blood having greatly fatigued and weakened the patient, on a consultation with the late Mr. Gould, amputation of the arm was resolved upon, and performed on the very next return, by Mr. White, in the presence of doctor Martin; and the man soon recovered, but was rendered incapable of service.

C H A P.



C H A P. XIII.

*Of Gangrene from Gun-Shot Wounds.*

From an high Sense of a long and well-proved Friendship,

And a due Regard to LETTERS,

INSCRIBED TO

DAVID ROCHE, *Esq;*

*Of the City of LIMERIC.*

LV. **T**HOUGH in the original plan of this work I did not intend to dedicate a particular chapter to gun-shot wounds; yet, maturely considering several treatises on this subject, particularly M. Le Dran's elaborate one, and a more modern dissertation of M. Belguer's, I did imagine I should be able to throw some further lights on this very interesting affair. Of all the accidents to which humanity is unhappily incident, none become more melancholy and complicated, than those arising from gun-shot wounds. A simple wound, or that inflicted by an incisive instrument, though the most mild,

is

is mostly, or always, attended with pain, inflammation, suppuration, &c. A contused wound becomes still more embarrassing; because, besides the above symptoms, the diameter and capacities of the vessels are in a state of compression, and until they recover their tone, the discharges cannot be so laudable. But in gun-shot wounds, besides the above recited, many more must arise, from the nature of the accident. Such are, delaceration and destruction of the parts, through which the ball passes: extraneous bodies received, and natural ones, becoming so; and a shock which the whole machine receives, equal to the momentum and velocity of the moving body. So that the effects of a general commotion must subside, extraneous bodies be removed, mortified parts taken off, and new flesh generated, before sores of this class can be brought to the state of a simple wound!

LVI. To conduct gun-shot wounds to this period, demands four indications. First, to change the nature and figure of the wound, by proper incisions, from a feared and contused, to a bleeding one. Secondly, to remove all extraneous bodies. Thirdly,

Thirdly, to suppress the hemorrhagy: and, fourthly, to remedy the symptoms that have already appeared, as well as prevent others that may possibly arise. To fulfil the first indication, it is a point universally admitted, that incisions only will answer. In general, the entrance of gun-shot wounds is smaller than the exit: the velocity keeps the whirled parts compact, but the resistance separates them: here then are incisions to be made, in order to convey soft balsamic dressings to the bottom of the sore. Wounds in an oblique direction, require the same treatment, to prevent fistulous sores, and to give greater freedom to extraneous bodies to discharge. These are the only cases, which appear to me, to require the immediate use of the knife. I am satisfied, and I believe it will require little reflection to convince others, that large and profound incisions do neither hasten the fall of the eschar, nor expedite the cure ---- Warm active stupes, and soft, oily, and balsamic applications to the parts, will be found, by experience, better calculated to answer both intentions. Profound incisions give additional pain, draw a greater degree of inflammation to  
the



the parts already pre-disposed to it, and add greater force to the general commotion, but do little towards reducing the fore to the end aimed at by the means. Warm stupes, and soft balsamic dressings, sensibly promote both, without enraging the symptoms. If spirituous applications to gun-shot wounds, before the eschar falls, be universally rejected by the first surgeons of Europe (though still followed by too many of the second and third class) as by its drying quality, and the increased pain, no way answering the purpose desired; why should not the nature and effect of incisions require also some discussion? Had not the effects proposed from the immediate and frequent application of spirits to hurts of this kind been doubted, the practice still might continue, though now acknowledged detrimental; and by proposing doubts in this received practice also its real effects will be with more precision ascertained. In the few cases of this kind, that fell in my way, I never found any detriment from omitting incisions, except in the cases already observed. That is, in deep, penetrating wounds, where the entrance is very small, to enlarge



feared, are in a great measure deprived of sentiment. Though what is loose and unengaged should be withdrawn, yet should what adheres strongly, be unmoved; since, for the reasons assigned, no danger can immediately arise from its presence, but very great from any violence in extracting. For the pent up bodies form different lodgments; and any force in extracting them, before the eschar falls off, must be a new source of inflammation. It is a case admitted by Le Dran, and most writers on this subject, that though all extraneous bodies should be first carefully extracted; yet if, from the situation of the wound, and the impacted substances, such attempts are likely to be attended with great danger, it is then recommended to avoid all operations, and to trust to nature for the discharge, on the sloughing of the eschar. If then it be allowed, that when the position of the foreign substances makes the extraction attended with danger, we should leave the work to nature, who seldom fails us; assuredly in less difficult cases we should leave something to her; at least, wait her motions for a few days. How much we may depend



pend upon her, in these cases, what follows will, I think, strongly prove.

Obs. 49. In June 1764, a desperate gang of villains had united to rob together, or separately, in different parts of the country, and intended to fix their head quarters in this city. The very first attempt they made, happened fortunately to be on a gentleman of determined resolution, and his name should be preserved with honor. Mr. David Dwyer was attacked by three of this gang, on the high road near this city, and knocked down the most forward of them: he was then dragged off his horse, and for a time engaged with the other two. But upon bringing down the second man, the third fled. This villain, though prostrate on the ground, and so kept by Mr. Dwyer, yet discharged his pistol at him, over his arm. It pierced the inferior and posterior part of the left scapula, and passed obliquely towards the spine, where the intercostal muscles and pleura were wounded. But though thus wounded and disabled, yet could not this ruffian disengage himself, notwithstanding his utmost efforts; and he was soon taken, and Mr. Dwyer brought to the turnpike

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house, where I visited him. The wound was jagged and tore, for the pistol was charged with small white flint stones, and for wadding, chewed brown paper was used. I made necessary dilatations, to extract the impacted substances, and reduce the sore to the state of a simple wound. With a good deal of time, and pain to the patient, I drew out some of the paper, and four small stones. Upon examining at the next dressing more carefully, I found the thorax pervaded; for my probe had a free passage into the chest. The wound was dressed with pledgits armed with a digestive of ungt. e gum. elem. diluted with ol. hyperic. hot; the pledgits secured by threads, with the usual apparatus, and a chaffing-dish of clear coals always kept near the wound during the dressing, and which is a precaution always to be used in penetrating wounds of the chest or belly. As the eschars began to loosen, small bits of extraneous substances came away; but what appeared to me very extraordinary, and which is the reason of publishing this case, is, that the ninth day from the accident, too small, white stones presented themselves to the orifice of the sore, which

which I easily extracted, and which were bigger than any of the former. The preceeding day I concluded that all extraneous bodies were removed, as from the closest inspection, nothing appeared; and yet, behold, next day nature performed, without pain or danger, what art, perhaps, attended by both, could not do! A violent cough, and sweats came on, probably the consequence of the fore's being too long exposed at each dressing. It was now dressed more expeditiously --- the digestive was succeeded by the balsam. traumat. with which the pledgits were moistened: pectorals, and tar-water, softened and lessened the cough, and the bark the sweats; and in six weeks from the hurt, he was completely cured, and to this day enjoys good health.

Obs. 50. A young gentleman very lately received a violent hurt, by the unexpected discharge of a fowling piece, at about a mile's distance from this city. Upon his coming to town, a surgeon of this city was sent for, as was Mr. Vernon, surgeon to the 49th regiment, and a very ingenuous gentleman, who in his way, requested my attendance. In attempting to get  
over



over a trench, he made a resting pole of his piece, and clapping his right hand on the muzzle, to spring over, the musket discharged. The third and fourth metacarpal bones of the right hand were fractured obliquely: the shot pervaded the carpus, and tore through the extensor muscles, along the fore arm, near to the humerus; and a little above the wrist, the interosseous ligament was exposed. He bled immensely on the accident, and whilst the gentleman first called was preparing his dressings, an artery poured forth blood smartly, which soon became staunched, on keeping my finger on the orifice for some time. All this extended wound was covered with lint, surrounded by compress and bandage, and wet in brandy. I, on the spot, made my objections to this practice, as did Mr. Vernon; and we proposed, instead of this, a soft (and I think a very proper) digestive to cover the wound, ex ung. gum. elem. greatly diluted with the ol. hyperici. For both reason and solid practice clearly evince, that in all accidents of this class, whatever promotes suppuration, and of course the sloughing of the eschar speediest, is the most eligible:

ble: now spirituous applications, by crisping and contracting the fibres, opposes, or at best retards this operation; whereas soft, oily and balsamic applications, by relaxing the parts, and abating the inflammation, hastens this process. The second and third dressings were, nevertheless, with spirits; of course the inflammation became more smart and extended, and the eschar rather hard and dry, than softened, and little appearance of suppuration. The necessity of altering our practice became therefore obvious, and soft relaxing applications succeeded to hot and drying spirits. ----- We began, by ordering a fomentation of camomile flowers on milk and water, with which the intire sore was stuped for a considerable time, and then dressed with the soft digestive already proposed. The same fomentation was repeated morning and evening, very hot; and in the course of three days the alteration the sore took for the better, was surprizing ---- The eschars sloughed off, regular pus discharged, and the inflammation and pain greatly lessened. To promote the discharge of shot, splints of bones, &c. a seton was passed, from  
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the first wound in the palm of the hand to the carpus, on its back, and at every dressing, armed with the digestive: an injection was also prepared to promote the same end. At every dressing, without pain, or fatigue, bits of bone, &c. came away. All extraneous bodies being removed, and suppuration well established, about the ninth day, the fores were dressed with dry lint, sometimes moistened with spirits, the seton was removed, but the injection still continued; and as the suppuration was pretty abundant, he took the bark in substance, to two scruples, three times a day. By this means, the sore, which in the beginning threatened no less than the loss of the fore arm, and which, considering the parts, might be well apprehended, became every day more and more simple: and to shew how much, in these cases, should be left to nature, the metacarpal bones, particularly that which supported the ring finger, besides the pieces fractured that came away, was also quite loose its whole length, and which, we conjectured, would intirely separate. Nevertheless, by avoiding moving it from time to time, which is too often practised in  
such



such cases, to hasten its issue, it became again firm. The injection was omitted, as weakening the callus formed by nature, and to the two apertures, *i. e.* to that in the palm of the hand, and that on the back of the wrist, lint wet in spirits was applied. A smart inflammation now attacked the inside of the carpus, and which, in about four days, was opened, and a good quantity of pus discharged. This was occasioned by the constant *pronation* of the fore arm, and part of the matter falling, and which found its issue this way. As the raising the limb too often must give great pain, besides weakening the callus of the bones, we contrived, in the *twelve tailed bandage*, an opening for the matter to pass thro', and were content to dress it once in three days, though the upper sore was every day. It soon healed up kindly, as did the openings in the wrist and hand, the upper sore became every day contracted, and he has the command of every finger but the fourth; but, what is still more curious, he has neither ankylosis, or stiffness of the carpus, which was prognosticated, and expected.

LVIII. From these cases it appears, that being too sollicitous about removing foreign bodies in these attacks, before supuration is established, rather retards than promotes the intent of healing; since by the falling of the eschars such bodies become disengaged, and must necessarily, of themselves, tend to the surface; it must not, nevertheless, follow, that where such substances pervade a part, and are sensibly felt at the opposite side of the member, that we are patiently to wait for this effect. It will be less force and constraint on nature to make a counter-overture, which, if not done immediately, may, however, be attempted in two or three dressings, or when the inflammation is lessened. Of this practice I had an instance in 1759, where a gentleman of my acquaintance, in an *affair*, received his antagonist's ball: it glided over the radius, and lodged externally, near the olecrane process of the cubitus. I made, on the spot, a counter-overture, and extracted directly the ball; nevertheless, had the case seemed more dangerous, I would probably delay the operation. As to the hemorrhagy, we have already fully explained ourselves on this

this

this article, in the preceeding chapter; but the fourth intention to be answered, in these hurts, namely, inflammation, requires particular attention.

LIX. Of all the symptoms that attend external accidents, none is more dreaded by surgeons, than inflammation and fever: to guard against these, profuse bleedings, antiphlogistics, diluting liquors, and low diet, are strongly recommended; and yet, necessary as these cautions appear, they may be carried to too great lengths. Inflammation is the natural consequence of every solution of continuity: it is even absolutely necessary to bring about the process of healing. The more violent is the hurt, *ceteris paribus*, the greater is its concomitant inflammation. Inflammation then, I boldly advance, because justly, so far from being apprehended, is greatly to be wished for: its absence is eternally a bad sign; and where it is but slow, the act of re-union, or healing, is very distant. If then a slight inflammation is absolutely necessary, to bring a trivial hurt to heal, it must consequently follow, that a more violent one is requisite to promote a re-union of parts,



after a more desperate accident. But tho' I deem a smart inflammation both necessary and natural after a severe hurt of this sort, and which should not be repressed; but should it become excessive, the pain very great, the fever high, and the lips of the wound inflamed, dry, or discolored, in this case, or even before, should proper evacuations and antiphlogistics be used. What I would mean to inculcate, and which experience will eternally prove, is, that inflammation should not be hastily repressed: it is a true concomitant on all hurts; and its excess or absence should be the only symptoms of this class we should guard against.

LX. After all these precautions, should gangrene come on, the cause should be enquired into. Should it proceed from an excess of inflammation, then are the remedies prescribed under that chapter to be used. If it forms with languor, dejectedness, and absence of inflammation, we must then have recourse to the stimulants, cordials, &c. recommended in the fourth and fifth chapters of this work. If the limb be almost severed; that is, if the bones be divided, and the limb suspended

suspended by a small piece of muscular flesh and skin, then is this part to be separated. Should the principal artery, or arteries, be lodged in the unhurt parts, yet should the division be still effected, observing first to secure these vessels, as we have directed in the last chapter. If the integuments and bone be quite carried off, and that some projecting pieces of this last should stick out of the stump, I would, by all means, interdict the sawing off them for some days, or till the inflammation is passed, for reasons which shall be advanced in the next chapter, which, I hope, will carry their proper weight.

## C H A P. XIV.

TO THE OTHER EXTERNAL ACCIDENTS, that necessarily require Amputation, and so various, and at the same time have such a sameness in the manner

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To the Honorable  
**THOMAS SOUTHWELL,**  
**G O V E R N O R,**

**KNIGHT of the SHIRE for the COUNTY,**

**A N D**

**CONSTABLE of the CASTLE of the CITY of LIMERIC,**

The following

Very interesting Chapter is dedicated,

**A S A**

*Testimony of the great Deference and high  
Esteem of the AUTHOR.*

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#### C H A P. XIV.

*Whether in other External Accidents, that require Amputation, it is more eligible to mutilate on the Spot, or procrastinate the Operation?*

**LXI. T**HE other External Accidents, that necessarily require Amputation, are so various, and at the same time have such a sameness in the manner of  
of



of treating them, except some internal vice opposes the cure (which, as we have already fully explained, we shall not here re-capitulate) that we shall pass them by; content if we can throw any further light on a subject, extremely interesting to the public, and to surgery: namely, whether in accidents that require amputation, it be safest to operate on the spot, or defer the operation?

LXII. The Royal Academy of Surgery, whose institution and labors do so much honor to surgery and to France, and who may be truly called a body of practical philosophers, since their great object is the conservation of man, God's immediate work, have attentively considered this great object. M. Boucher has given, on this head, two long, and very useful memoirs, relating to gun-shot wounds, indeed, the most complicated, and melancholy cases, that can occur. In the first, he proves the frequent abuse of amputation in these cases, by twelve most remarkable cases. "The first was a young man, shot through the thigh, with a considerable fracture of the femur, near the condyles. Considering the dangerous tendency

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dency of the sore, and the little probability that the extremities of the bones should re-unite, and the circulation be restored, a consultation was held, when amputation was proposed, as the only means to preserve life. The patient, however, resolutely opposed it; and notwithstanding the large splinters from time to time taken away, the frequent incisions, fever, &c. in about ten months he was completely cured, but with this thigh shorter than the other.

The second relates to a fracture of the lower extremity of the arm, by a gunshot, of which the patient also recovered without amputation. The third to a servant, who was shot with a pistol-ball in the fore arm, with which the internal condyle of the humerus and olecranium were wounded; and though the wound was attended with very dangerous symptoms, which were relieved by bleedings, incisions, poultices, stupes, &c. yet did the patient not only get a cure, at the end of twelve months, but also recovered the ankylosis, by means of warm baths. The fourth case, is that of a captain in the Irish regiment of Bulkely, whose arm was  
fractured

fractured by a gun-shot wound, much in the same manner as in the preceeding case; and though amputation was resolved on, yet did he recover without this operation, but an incurable anchylosis remained.

In the fifth case, one of the gens d'arms was cured of a similar accident, with very few bad symptoms. The sixth case, is that of a drummer, who received a shot thro' the lower part of the femur, in which the inner condyle was engaged. The symptoms were violent and pressing: variety of bleedings, incisions, medicines, and extraction of the splinters of the bones, in the course of eleven months, however, completed this man's cure. In the seventh, a captain of the regiment of Orleans received a musket-ball, at the articulation of the wrist, with the fore arm. The inferior part of the radius was fractured, with a considerable laceration of the tendons, &c. yet, nevertheless, this patient was cured, but with a stiffness in the articulation. The eighth, was a Dutch prisoner, wounded in the foot; the ball passed from the malleolus internus, and astragal, through the malleolus externus. This man was



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completely cured in about nine weeks. The ninth, was a lieutenant of carabini-  
niers, who received a ball, that tore thro'  
the deltoid muscle, fractured the head of  
the humerus, and part of the clavicle. The  
extirpation of the humerus was judged  
absolutely necessary, which the patient  
resolutely opposed, and by that means  
saved his arm, and was discharged with  
a small fistula, which the warm bath  
cured. The tenth was a soldier, wounded  
with a musket-ball in the upper part of  
the humerus, with a fracture of this bone,  
who also got his cure without amputa-  
tion. The eleventh case, was that of a  
lieutenant of grenadiers, of the Irish re-  
giment of Clare, who received a musket-  
ball at the elbow, with a fracture of the  
head of the bone, and soon recovered,  
without any bad accidents. The twelfth  
was a lieutenant of the regiment of  
Hainault, who received a musket-ball in  
the foot, which was lodged in the calca-  
neum, and after its extraction, he was  
completely cured."

LXIII. From these cases, the author  
makes two remarks, which should be  
strongly inculcated to young surgeons:  
the

the first is, that in the inflammatory state of these wounds, the topics were mostly of the relaxing, anodyne, and emollient kind: nothing spirituous, or stimulating, and the internals corresponding; but that, in the gangrenous disposition, the bark, theriaca, spirituous applications, and, in short, the reverse of this practice was pursued. But though he thinks the efforts of nature, in many cases, are amazing, yet he acknowledges, that there are certain accidents, which nothing but amputation can remove--- Such, for instance, are fractures of the larger extremities, in which numbers of splints stick out, and cannot be removed--- When the same bone is fractured in different places--- When the extremity of one of these bones is intirely separated from its body, and shattered in many places: these, on the spot, indicate amputation. The secondary symptoms, which, he says, indicate amputation, are, when the wounded parts are seized with convulsions, the consequence of violent pains, and which the complete section of the adjoining tendons (a desperate remedy truly, and which alone must necessarily bring on amputation!) does not abate---

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Where the bone is surrounded with loose, flabby flesh, and a sanious discharge, with acute pain, which indicate the bone disordered ---- And where a sphacelus is formed.

LXIV. But where the primary causes, or first appearance of the sore, require amputation, he thinks, the sooner it is performed, the better; for when deferred, he says, the irritation of the nervous, and violent commotion of the vascular system, which soon succeed the accident, put the whole animal oeconomy, and mass of fluids into disorder, by which the laudable pus, necessary to promote the cure, is defective, and the cure doubtful---at best tedious. And he attributes the want of success, where the operation is deferred, not to the first cause, but to this alteration caused by the delay --- At least, he embraces this opinion, till such time as a sufficient number of experiments determine, whether more lives are lost by delaying, than by immediately performing it, where it becomes absolutely unavoidable --- If I understand my author, these are his express sentiments.

LXV. This



LXV. This illustrious body thought this point worthy their attention; and in some time after, M. Faure presented to them a paper, wherein he attempts to prove, that in gun-shot wounds, so complicated as to require amputation, in order to make the operation successful, we must wait till the cessation of the symptoms. For he affirms, that by immediate amputation, the usual symptoms attending the accident, such as fever, pain, inflammation, &c. are encreased, and hurry off the patient: whereas by giving nature time to recover the first shock, her works are more speedy and kind. Of the truth of this, he has had ample experience; since he declares, that out of about three hundred persons, who underwent this operation at the hospitals of Douay and Lisle, after the battle of Fontenoi, in the first instance, no more than thirty or forty persons escaped.

LXVI. Convinced that this rapid mortality proceeded from the exposing the constitution to so many violent strokes at once; namely, the usual symptoms attending on all compound fractures, and the derangement which the whole machine must suffer in consequence of them, and  
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the symptoms attending on the amputation also, he determined to take a different course. Accordingly ten patients, who the operation was judged absolutely unavoidable on by his brother surgeons, he directed to be left by, and, for a month, was content only to temporize with; that is, to prevent an excess of inflammation, opening abscesses, and following all other rules of art, except amputation --- Of these, the following is an account of their success.

“ 1. A young English volunteer was wounded at Fontenoi by a cannon-ball, which broke the head of the humerus, &c. and, at the same time, a musket-ball made a complicated fracture of the leg. The swelling, inflammation and fever, were very severe. Abscesses were opened, splints of bones removed, and every other caution observed. He earnestly begged to have the arm amputated, but it was refused him, being judged useless. Nevertheless M. Faure performed the operation, in the articulation, with the scapula; and though extremely weak and extenuated, he recovered very fast; and it was even observed, that the wound of the leg grew better, after this operation, and he was discharged,

discharged, cured, in two months after. Encouraged by this extraordinary success, he undertook the other nine. At this time they were in a melancholy situation: their wounds full of fungus flesh, a bloody sanies, instead of pus, discharged from them; and there was no appearance of a re-union in the fractured bones. He began with the worst case, namely, a complicated fracture of the thigh, and the patient had not the least bad accident. Next was a fracture in the articulation of the knee, through which the ball passed. --- A compleat fracture of the fore arm, which extended to the humerus---A wound at the inferior part of the fore arm, with shivering of the bones of the carpus---A wound at the upper part of the humerus, with a fracture above an inch broad---A fracture of the bones of the carpus---The os calcis shivered, and the tendo achillis tore---A complicated fracture of the tibia---A fracture of the tibia, in which the tarsus was engaged."

LXVII. These ten persons, thus described, were speedily cured; and from the extraordinary and unexpected success attending them, this gentleman contends strongly,



strongly, that in all cases, ~~that~~ amputation must be unavoidably performed in, we should ever defer the operation till the fever and other symptoms cease; and exclaiming against the little success attending those on whom amputation was immediately performed, he adds ---- “ We  
 “ might even say, that the sooner their  
 “ limbs were amputated, the sooner were  
 “ they condemned to death !”

LXVIII. M. Boucher presents to the academy a second Memoir, in which he gives the above detail, and his reasons for performing the operation as soon as necessary. He distinguishes three periods for this operation. The first, immediately, or soon after the accident, and which precedes the symptoms. The second, when these symptoms are more or less disposed to affect the animal oeconomy: and the third, when the most violent symptoms are abated, or absolutely ceased, which is the precise time contended for by M. Faure.

LXIX. At the time of the hurt, or soon after, he thinks the body must be in the best state, and therefore this is the most eligible time for performing the operation. By deferring, from this time, the efforts  
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of nature are useless, and she becomes weaker, the melancholy effects of which delay, he affirms to have been witness of. For how, says he, can we expect, that a body, extenuated with pain and misery for five or six weeks, should be then in a better condition to support a terrible operation, than when in full strength, as must be the case at the time of the accident? He here, in a note, gives some instances of the fatal effects of this delay; and after, follows a detail of patients, on whom the operation was performed in the first period. 1. One of the queen's gens d'arms, whose arm was amputated, and he discharged in four months. 2. A captain of the Irish regiment of Dillon, amputated in the arm, on the field of battle. 3. A captain of the regiment of Hainault, whose leg was taken off on the field, and cured in a little more than five months. 4. A lieutenant of the Irish regiment of Clare, whose leg was taken off six days after the battle. 5. A black musqueteer, the thigh amputated the fourth day---he died. 6. A quarter-master of the gens d'arms died four days after an amputation of the leg. 7. A captain of the regiment

of Clare, died four days after an amputated arm. 8. A captain of the regiment of Dillon, died eleven days after an amputation of the leg, made on the field of battle. 9. A captain of the regiment of the Crown died, nine days after an amputation of the leg. So that, out of nine patients, in the same hospital, on whom the operation had been immediately performed, four were cured, which deferred to the third period, or to the time prescribed by M. Faure, would have probably died.

LXX. Having thus briefly and justly shewn these gentlemen's reason for such opposite practice, I flatter myself, having long considered the subject, that I shall be able to throw this whole affair into an higher degree of certainty.

The great point M. Boucher contends for, is, the great advantages arising to the patient, by having his limb taken off in the first period, or before the fever, inflammation, &c. come on, which in themselves endanger the life of the party. But it is highly probable, this gentleman never once recollected, that this fever, and all other alarming symptoms, though they do not immediately appear, are, nevertheless, the



the effect of the derangement in the constitution, on receiving the accident; that on this account, it is certainly very bad practice to amputate till, at least, part of these symptoms are abated, for three excessive strong, and clear reasons. First, so much depends upon the habit of body, that we cannot be too cautious in our prognostics. For, if the slightest hurts happening in constitutions seemingly sound, are often attended with the most fatal symptoms, in spite of the earliest and best resources of art, as by many melancholly instances in this present work appears; how then can we, with any degree of certainty, immediately promise ourselves success, by performing a terrible operation, till we first know, if the very juices themselves will not be the greatest obstacle to a re-union? Secondly, how often does it happen, in the best constitutions, that the terrible shock, which the whole frame sustains on a violent gun-shot wound, nay, even in a fall, without any fracture, or visible hurt, that the parts can never recover their tone, and the patient in some days expires? What else are concussions of the brain; violent leaps, where, though

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the party comes down on his legs, and has no visible hurt, yet dies, with all the appearance of a concussion of the brain? What else, but the velocity of the circumambient air of a discharged cannon-ball, which, by deranging the whole animal system, kills the party, without sign of hurt? If these account for the death of the patient, will not this be a strong reason for delaying amputation, till we know whether nature is strong enough to recover from this shock, without adding to his misery, that of a cruel and terrible operation? Thirdly, let us suppose, to give this gentleman and his partisans argument their utmost force, that, happily for the patient, though unknown, or never reflected on by the surgeon, first, that the juices are balsamic and kind; and, secondly, that nature is strong enough to recover from the shock, which every accident more or less subjects the constitution to; how can we possibly foresee, or, at least, is not the presumption very strong, that by an immediate amputation, after such a terrible violence, as absolutely indicates it, we expose the constitution to the severest trials, and the greatest danger possible?

possible? If in anchylosis of the tarsus, with great pain, which has reduced the patient very low, we find a severe fever and inflammation ensue, the consequence of the pain, and the shock the human frame has sustained by an amputation, how much more is it to be dreaded after a terrible gun-shot wound, or complicated fracture, which accidents alone bring on all these symptoms in an higher degree? Justly then does M. Faure explain, "That the sooner their limbs were taken off, the sooner were they condemned to death!"

LXXI. The few instances advanced by M. Boucher, of the success of immediate amputation, for the reasons I have above assigned, can prove nothing for him: if any thing can be granted, it is, that happily for the patients, their constitutions surmounted the rashness of their surgeons, as well as the severe trials of nature. As then amputation should *never be practised after sudden accidents*, till, at least, the violence of the symptoms, proceeding from it, are abated, for the reasons assigned, and which I again inculcate: namely, first, till by laudable suppuration we are assured,



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fured, that the juices are balsamic, and which becomes manifest in eight or ten days. Secondly, till we are certain that nature recovers from the shock, which we will also be certain of, by reason's becoming restored, if lost, or by the state of the pulses, and nervous system: this also becomes apparent about the eighth or ninth day. And, thirdly, till it becomes manifest, that the pain, fever and inflammation will not terminate in gangrene, sphacelus, or death. This the state of the pulse, and spirits, and the nature of the suppuration, will determine.

LXXII. But besides these advantages, at least, these points of knowledge gained by the delay, another, and a greater, also follows; namely, that the abatement of the fever, and the laudableness of the suppuration, are the highest preparations, and the most useful, the patient can possibly have, previous to the operation: he is, at the time of amputation, in the same state that we could wish a patient to be in, who is to suffer inoculation; and a great degree of certainty attends the recovery of the patient, especially in our method. I shall just single out one observation, which

which first threw me into this chain of thinking.

Obs. 51. A girl, about sixteen, of a good constitution, some few years past, on Pennywell road, adjoining this city, was accidentally shot in the thigh. The swan-shot fractured the femur, at the lower condyles, and the rotula anteriorly, and passed thro' the parts, with a very large wound. In this situation she lay extended on a table for about two hours, when assistance came. Her pulse were regular, she spoke sensibly, and seemed more alarmed than pained. We judged amputation absolutely unavoidable; and her thigh was taken off directly, but she died in about four hours after. Here the death of this girl was visibly hastened, by adding amputation, before nature had time to recover from the first accident.

The truth of this reasoning will still appear stronger, by the following observations.

Obs. 52. John Quinlon, a sedan chairman of this city, in a dispute with another chairman, received a fall, by a trip, that the tibia tore thro' the flesh, at its articulation with the astragal, and reached down  
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a little below the os calcis, and the fibula was consequently terribly fractured. This accident happened the latter end of August 1760. To reduce these parts was absolutely impossible; because a less force than was necessary for this, must separate the foot from the leg. Amputation was the only resource left. The man was strong, and about thirty-five years of age, so that every thing might be expected from the constitution. However, on mature deliberation, though amputation was absolutely unavoidable, I was determined to defer it for some days. Accordingly I laid open the flesh below the protruded bone, and formed an eighteen tailed bandage, in which, after a gentle extention, I laid the leg, bled the man, and had the parts often wet in brandy. In a few days the inflammation became violent, which was somewhat allayed, by bleeding, fomentations, and poultices. In twelve days from the accident, finding the foot gangrened, I determined to amputate. The next morning I performed the operation; and tho', after taking off the limb, some real pus (the remains of the inflammation) flowed from the stump spontaneously, yet



yet did the cure go on as happily as could be wished, and in about ten weeks he was completely cured.

Obs. 53. Allice Blachall, about fifteen years old, subject to epileptic fits, and paraletic of the right side, leg, and arm, in one of these fell into the fire, and had the diseased leg so miserably burnt, that the bones of the toes and metatarsus spontaneously dropt of, and those of the tarsus were uncovered, and ready to separate. In this condition she was left at our hospital door, July 17th, 1762, but with an hectic, lax, and a large discharge from the leg, which was also burnt. This accident happened about ten days before. The sores, which were filthy, I had carefully stuped, and washed with a decoction of wormwood; and finding amputation absolutely unavoidable, I had a consultation called, who unanimously agreed on the necessity of it; but persuaded me from attempting it in my new way, as not giving the operation a fair trial. But satisfied that it would rather add to her chance for life, July 23d, I performed it, and she was discharged, completely cured, in the latter end of the following month,

with a firm coat of flesh to cover the extremity of the stump, notwithstanding that this whole side was completely paralytic, and of course the balsamic juices were greatly deficient.

Obs. 54. John Deelan, a poor man, received the fire from a musket, charged with small shot, in his right hand, and so near, that the wadding rested in the fore. Being recommended to our hospital by the reverend dean Massy, the day after the accident, he was immediately admitted. The little and ring-fingers were quite tore off, and hanging by a little flesh, and the two metacarpal bones, that supported them, were also fractured, and terribly tore; and the shot was promiscuously thrown into every part of the hand. It was judged impossible to preserve the hand: but, for the reasons already specified, I was determined to defer amputation till the inflammatory state was over. However, I separated the two fingers from the hand, dilated the sores, and extracted a great deal of shot, tow, broken bones, &c. The inflammation which followed was very violent, and extended very high up the arm; but was relieved by profuse bleedings, emollient

emollient embrocations, poultices of flumery half boiled, nitrous medicines, &c. In about twelve days, this orgasm was greatly abated; and willing to preserve part of his hand, if possible, I extracted the intire remains of the two metatarfal bones; and, by this means, a great deal more shot, splints, &c. and, contrary to expectation, this man was discharged with two fingers, and part of his hand, with which he has been able to support his poor family since by day labor.

Obs. 55. One O'Neal, returning from town, much in liquor, fell into a sand-pit, on the high road near this city, and a very large stone fell on his right leg, with such a force, as to fracture the tibia for above three inches, in a most dreadful manner, with a wound of a larger surface. Indeed the bone was broke into numberless bits; insomuch, that, considering the length of the fracture, it may be safely affirmed, that a quarter of an inch of it was not intire. He was carried to the turnpike-house, and I sent for. On the spot, I prepared an eighteen tailed bandage, dilated the wound, extracted a great many loose bits of bone, dressed with soft lint, and



bled him. Next morning he was brought to town, on a door, and dressed lightly for some days, till the state of inflammation was somewhat abated, when I determined to take off his leg, which it was judged impossible to be saved: and, I dare say, from this slight description of the case, every surgeon would conclude the same. Nevertheless, so bountiful was nature in this case, and so strong in her resources, that in four months, from the accident, this man could use this leg, and is now a living witness of this truth --- So that, besides the reasons already advanced, we have a chance for one more --- and the greatest advantage to the patient --- namely, the chance of saving the intire limb, by delaying the operation.

LXXIII. But as M. Faure does not absolutely determine the precise time of performing the operation, after the accident, and that by the delay of six weeks, or till the symptoms cease, numbers of lives must be lost --- I observe, that this is very vague and uncertain; because, by the nature of the accident, many symptoms must subsist, even after the general inflammation is passed ---- Such are, extraneous bodies,  
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constantly irritating, splints of bones, too abundant suppuration, &c. In such cases, it will be in vain to expect an abatement of symptoms, till the cause of them is removed, namely, the limb taken off. Upon maturely then considering the whole affair, I boldly affirm, that the shock from the general inflammation, the knowledge of the patient's state of blood, and habit of body, &c. will be thoroughly known in about twenty days from the accident; and every symptom that continues subsequent to this, must take its rise from the fore itself, and that where amputation is absolutely unavoidable --- Supposing the patient to be treated all the time preceding this according to the rules of art, it should not be deferred longer, lest the patient sink under it. By this means, instead of about one in three amputated patients recovering, we should scarce loose --- almost to a certainty --- one in twenty.

C H A P. XV.

*Of the Flap Operation, its Rise and Progress.*

PRESENTED

With very great RESPECT and ESTEEM

T O

M A C N A M A R A,

Of MORIESK, in the County of CLARE,

A N D

CHIEF of that Antient and Noble Sept.

LXXIV. **T**HE first account we can trace of this operation, is from a book published by Jacob Young, surgeon, in London, in the year 1679, entitled, *Currus Triumphalis ex Terebinthino*. In the latter end of this is contained the extract of a letter, recounting a new method of amputating, proposed by Mr. Lowdham; which consisted in preserving a piece of flesh and skin, to cover the extremity of the stump, in order to abridge the cure. However no traces of its success can be found; nor was it till the year 1696, that it became publicly known. At this time P. Adrians Verduin, an eminent



gent surgeon of Amsterdam, published a Latin dissertation on this subject. It is not improbable, but he might receive the hint of it from Young's book, by means of some English students: if so, he acted ungenerously, in not mentioning its inventor. But, be that as it may, it is certain his description of it is very full, as well as his apparatus.

LXXV. His views were more extensive and sanguine than its first inventor, who proposed no more, than expedition in the cure, and the securing the stump from after-pains, by the bones being covered with solid flesh. Verduin imagined, that not only the parts would speedily unite by inosculation, without suppuration, or by the first intention, but also that the flap of flesh, applied to the extremity of the stump, would save the necessity of taking up the blood vessels, a thing often wished for. It must be allowed, that his method was cruel and tedious, and nothing but the good resulting, or expected from it, could countenance it. To answer these ends, he proposed a great variety of straps, soutiens, or supports, &c. to keep the divided flesh exactly united to the new sawn bone.

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However, upon the most exact enquiry, notwithstanding the praises bestowed on this method by Ruysch, Manget, &c. it little answered the expectations of its admirers, or of the public. Verduin says, he performed this operation in the hospital of Amsterdam, and the man did well. Ruysch says, that Verduin's son-in-law performed it on a boy of about sixteen years old, with equal success; and Van Ulooten essayed it on a third, which also succeeded.

LXXVI. In 1702, Sabourin, of Geneva, proposed a similar operation to the Royal Academy of Sciences, which he did not confine to the usual place of amputation, but proposed it, even in taking off the limb at its articulation. This illustrious body prudently suspended their opinions, till experience confirmed this theory. Accordingly a patient underwent this operation, at la Charite, who died; and tho' the reports of Messrs Duverney and Mery, who were desired to attend this operation, did not absolutely condemn it, yet it is a known fact, that it was never after attempted in France.

LXXVII. But

LXXVII. But if the above three patients did well after this operation, why was it not more universally practised? A method so manifestly superior to any ever invented, if successful, after exciting the curiosity of the ablest surgeons in Europe, could not possibly be rejected --- even by its first inventors, as every one knows was the case. However, Heister and Junkers tell a different story; and say, it was laid aside on account of the monstrous hæmorrhagy, and for want of success: and, notwithstanding the remarks of M. De la Faye, in the Memoirs of the Academy of Surgery, we certainly think these gentlemens account of this affair to be the genuine one; more especially, as we shall demonstrate, from their operation and method of conducting the cure, that, *it was absolutely impossible for it to succeed*; and this will sufficiently answer the report made by Manget of another successful operation, performed by Sabourin, on a man at Geneva. M. Le Dran says, he *once* performed this operation, and the cure was completed in twenty-one days. It is amazing that such a gentleman as M. Le Dran, from whose observations, and writings, surgery has re-

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ceived



ceived such improvements, should so lightly dwell on an affair, so interesting to the public, to his own glory, and to surgery! Who has been so minute and detailed, in things of less consequence, should merely mention this, as it were *en passant*, without rendering any account of the symptoms, method of dressing, &c.!

LXXVIII. But M. Garengoet is the most sanguine admirer and advocate for this method. He says, officers have been seen to skip and leap about, after this operation, with the same facility, as if no such accident happened; and he regrets, in his Operations, tom. III. that it is not oftner put in practice. He afterwards proceeds further; and in the Memoirs of the Academy of Surgery, not only relates three cases, where he performed this operation, and the two last with success, but also proposes further improvements on it. As he speaks with great confidence of this affair, and had promised these Observations to the Academy a long time before they were given in; and that it would be hard to suppose, that he intended imposing on so respectable a body, we shall give them a candid examination.

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He says, about twenty years before the presenting this memoir, he performed Verduin's operation on a mason at Mants, and this man died the third day after; and, as he observes, " Though it cannot " be absolutely said, that his death was " owing to the hemorrhagy, yet it must " be allowed, that it had a considerable " share in it." Thus instructed, in twelve years after, he performed the flap operation, in Ravaton's method, on a soldier of the king's regiment of infantry, but took up the brachial artery, and the patient was completely cured in twenty-eight days: but as he says, he omits a detail of the apparatus, as indeed he does of the manner of dressing, so essential in this affair. His third operation was on the leg of another soldier of that same regiment. After tying up the blood vessels, he left the threads of a considerable length, which he surrounded with proper compresses, and then applied the dressings, pretty near the common way, instead of Verduin's, which he here rejects. He continues, " I. " did not take off this apparatus till the " fourth day, when I found the flap ad- " herent, with a gentle heat." In a word,

his patient was perfectly cured in twenty-seven days. " I am not insensible (he adds) that some surgeons, of this regiment, have performed this operation, but by following Verduin's method too exactly, they have failed of success. I am persuaded, the alterations I have already made in it, are of some consequence; and I should *still add more*, did I see any necessity for making them."

LXXIX. From this account, it would seem, that M. Garengoet had brought this operation to the highest perfection; tho' M. Louis, surgeon of Sal Petriere, in a subsequent paper, in said works, is far from agreeing with him in this point. However, any one who is acquainted with his other writings, his love of fame, and how scrupulously exact he is to make you take notice of every observation and remark of his own; how detailed he is in the triflingest point, that regards his own cases, will see a manifest difference between them, and the paper in question: there he speaks with the highest confidence; here, with the greatest diffidence; there a puffing swelling of the common integuments of the head (see his Surgery, tom.



tom. 2.) from a fall, which he points out how to distinguish from a fracture of the cranium (wonderful!) takes up three or four pages; whilst here, the detail of three different amputations, with his improvements, success, &c. scarce take up so much! But it is long before this, that this gentleman's veracity has lain under some doubt; and few read his cure of the man's nose, that was bit off, and stamped on in the gutter, and after by him united, but with astonishment and surprize. (See tom. 1.) In the present case, he affirms, that the flap was united to the stump in three days; that is, by the fourth morning. And yet I would ask the ignorantest tyro of the profession, if ever he saw, or even heard, of a wound of but even an inch long, being united in this time? And behold, here, an immense flap of flesh, almost that of the whole leg: a complete division of nerves, muscles, blood vessels, and bone, united in that space! The inflammatory state of a common wound is scarce over in six days; and every one knows, that after so terrible an operation as this in question, it must last much longer. From this single, and dangerous  
assertion,

assertion, the reader may judge what dependance we should have on this whole account. But this method has not only been censured by M. Louis, who thinks, if it had all the advantages and success attributed to it by M. Garengoet, as well as by its first inventors, and their advocates, it could not be so universally rejected, even by these very men, who were so sanguine to proclaim it. The learned baron Van Swieten, in his Commentaries on Boerhave, speaks of it as an operation universally laid aside; and Mr. Sharp, in his Critical Enquiry, which he did not publish till after his visiting Paris, speaks of this operation, but by hear-say; nor does he make much account of M. Le Dran's success in this way, any more than he does of the operation itself.

Having thus clearly pointed out the little dependance to be had on the different accounts of this operation, from its first inventor, to our times, which will appear still clearer in the next chapter, we shall there point out the most precise and expeditious manner of performing this operation, as well in the thigh as leg, with the bandaging, dressing, &c.

C H A P.

CHAP. XVI.

*Containing an Account of the different Experiments made by the Author, to ascertain his new Method of Amputation.*

TO  
HENRY QUIN, M. D.

VICE PRESIDENT and CENSOR

OF THE  
COLLEGE of PHYSICIANS, DUBLIN,

AND THE

KING'S PROFESSOR of the THEORY and  
PRACTICE of PHYSIC,

*The PRINCIPLES of the New Method of  
Amputation are respectfully addressed.*

LXXX. **T**HERE are but few surgeons of reflection, who the reading the flap method of amputation, I believe, has not made some impressions on. The facility with which large wounds, where even the bones are engaged, unite; and the daily experience of sound flesh covering firmly the bones, after very considerable exfoliations, could leave



leave no doubt of this operation's, in the end, proving successful, were the obstacles to this union maturely traced. But to investigate this --- *Et hic labor, & hoc opus!* The concurrent testimony of modern writers, as appears by the last chapter, who have all, in a manner, rejected it, for want of success; and its total disuse, in all the hospitals of Europe, were but small inducements to a person, not much advanced in years, to attempt to revive it, or rather, indeed, to invent a new and universal method of amputation. Convinced, nevertheless, by the above remark, that it might be, in the end, successful, I was determined patiently to trace the obstacles that opposed it, by which I should render to mankind an essential service, and some degree of lustre to my own name.

Obs. 56. The first satisfactory hint I received, in relation to this pursuit, was in amputating a cancered breast in this city, in May 1754. Mrs. Ann Pinchin, who gave rise to this remark, had an ulcerated cancer of the left breast, of a frightful figure, attended with terrible symptoms. From an opening to the nipple, hung a  
fungous

fungous excrescence, both in size and figure resembling a large placenta, from which a reddish water, of an almost insupportable smell, constantly discharged; which, in the space of half an hour, after application, turned fresh lint, and linen, to an inky blackness. This, with a constant puking, low pulse, and hectic, justly made her life despaired of; and she was accordingly deserted by the gentlemen who had attended her. I was then requested to visit her; and finding the axilla quite free and disengaged, and the cancerous mass confined to the breast only, I figured to myself, that all these alarming symptoms might proceed from the discharge and pain in the affected part only; and that dissecting away this mass, might give a chance for life. I, however, gave her very little hopes, but caused the gentlemen, under whose care she had been, to be sent for, and proposed to them the operation. This means seemed to them very unpromising; as, indeed, it did to myself; but as I had laid it down as a fundamental rule of conduct, never to refuse my assistance, where I thought any chance was left, I could not, with safety

to my own mind, here refuse it. They consented to be present at the operation; and, as the symptoms were pressing, and the weather warm, delays were dangerous. I, therefore, next morning, in the presence of Dr. Martin, her former surgeons, and two military ones, dissected this mass from the breast, by preserving as much sound skin as I could, which was very considerable, and stuffed the cavity with loose lint, mixed with flour. The tumor weighed one pound ten ounces, being taken out whole and intire; and, in about three hours after the operation, the symptoms began to subside, according to the old adage --- *Sublatâ causâ, tollitur effectus*. Her puking ceased: in the evening, her pulse became fuller and stronger; and she had a tolerable good night's rest. The morning of the third day, the lint, on removing the dressings, was as black, as if the humor, or part of it, still remained. This determined me, to continue dressing this cavern, till the matter became clear and well conditioned, which it was the 6th, 7th, and 8th days. The ninth morning, instead of dressing between the bare ribs, and preserved skin, as usual, I pressed them



them together, by means of a cushion of soft lint, outside, and dressed only the part destitute of covering. The eleventh morning, these parts were firmly united, and the whole fore did not exceed the breadth of a silver crown; and, to the surprize of all her acquaintance, she was cured, and abroad, in twenty-six days from the operation, tho' in the beginning despaired of.

LXXXI. Though from this fact I was clear, that the operation a Lambeau must succeed, yet could I, not yet, see clearly where the defect lay; nay, I shall ingenuously confess, that were it not for the discolored lint, which determined me to keep these parts longer separated, I should not, perhaps, gain so much credit by the success of the cure, as I did by my manner of operating. I, nevertheless, still continued my notes and remarks. I observed that wounds, even the most simple, had some degree of inflammation, before they healed; and that in others, that required stitching, in order to heal kindly, and prevent a disagreeable cicatrice, my expectations in both were often frustrated: nay, I frequently observed the inflammation so high, and the divided lips

of the wound so distended, as to tear through these filken restraints! In consequence of these remarks, in many cases, I was singular enough to omit stitching, in large wounds, till the state of inflammation was past; content, for the present, to keep them in a state of union, by light, soft dressing, and bandage, and had the satisfaction, sometimes, to see this operation become unnecessary; and, when used, to be of the greatest utility. *Healing*, I then observed, *by inosculation, without suppuration, by an immediate coalescence, or by the first intention, is merely chimerical, and is opposite to the rules of nature.* Inflammation (contrary to the received canon) is not the time to hope for a re-union of divided parts; this happy minute follows, not precedes, suppuration. Thus, says I, has it happened in the operation a Lambeau; an union was expected, during the state of inflammation. No wonder then, if the fresh divided flap, being strongly pressed against the rough, prickly ends of the new-sawn-bone, brought on the most dangerous symptoms: that the patient died in the inflammatory state; that the flap mortified; or if the patient, through

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an uncommon degree of constitution, passed through these two states, the remainder of the cure was completed as in the common manner; that is, by the mortified flap's first sloughing off. I was the more convinced of the truth of this chain of reflections, by observing, that tumors of the encysted kind; all sorts of strumous swellings: in a word, all sores, that manifested little degree of inflammation on forming, on opening, or after it, were with the greatest difficulty healed. Nay, by observing the different degrees of inflammation, I have been enabled to form a sure prognostic of the length of the cure. Hence it was clear to me, and must be self-evident to every gentleman, that the methods of conducting the cure, as proposed by Verduin, by Sabourin, by Garen-goet, &c. being founded on false principles, could never succeed, except by the separation of the flap.

LXXXII. But if gentlemen of established reputation, such as the above, have with more confidence than veracity, not only asserted, but published, their ill-founded pretensions to this operation, as sensible what an acquisition of glory it must



must be to them; we must be less surprized to hear of people, scarce known beyond their sphere of action, modestly *whispering* their claim to this honor. Such is the substance of a letter addressed to Mr. Cleghorn, and which this excellent anatomist was kind enough to communicate to me. The author not only describes the amputation of a thigh-bone in the flap way, but also the success attendant on it, with as much gravity, as if every word was true. He says, the bone was covered (I think) in four days, and the boy cured in fourteen! The friends of another surgeon of eminence have also --- indeed with more zeal than candor, asserted, that he has thrice performed this operation, with success; and yet no effort has been made, to demonstrate such facts. But this gentleman has very candidly disclaimed to me, any pretensions to this honor, which the warmth of his friends would attribute to him. To acquire character, by such insinuations, requires but very little attention or diligence; since the celebrated M. Ferrein, of the Academy of Sciences, has complained to his pupils, that the anatomical discoveries in the eye, which, in my *Treatise*

*tise on the Cataract*, I published as my own, were really taken from his lectures. Such an *insinuation*, and from a gentleman of his *known virtue and integrity*, may seem to lean hard on my veracity; but incapable as I know myself of sinister dealing, I can easily clear up this charge. That he never demonstrated --- at least in the years 1747, 48, and 49, these particular discoveries, which I indisputably claim, is what numbers can attest: that he never published them, is what every one knows. Long before I printed that work, I demonstrated these facts to some cotemporaries: I particularly mention Dr. Tobin, of Nants, who attended this gentleman's accurate course of anatomy, with great diligence, and who never once dreamed of his claim to them. My learned and ingenuous friend, Dr. Camper, than whom no one is better acquainted with the structure of, and writers on the eye, as his elaborate dissertations on this organ proves; yet, by repeated dissections, did I convince of the truth of my discoveries; as well as the justness of my New Theory of the Cataract. This gentleman, who came directly from Paris, and after me, would  
such

such discoveries, and on a favorite subject, escape him? Would a member of the Academy, and most eminent professor of anatomy, who has described the lymphatics of the eye, suppress these on the very structure of this organ? ---After all, I am satisfied, that he should be supposed a *silent* discoverer of these labyrinths of nature, but let me not be suspected of an act of insincerity, which I was never capable of.

Obs. 57. In March 1759, I cut off a gentleman's arm, at about eight miles distance from this city. By good management, a great deal of skin was preserved in the operation; and the bone, on dressing up the stump, was sunk above half an inch from the surface of the wound. When inflammation was abated, and supuration firmly established, that is, about the eleventh day, instead of making the bone and the skin distinct fores, as I had done, I laid this preserved skin against the extremity of the bone, and in twenty-four hours there was a perfect union. I quitted him the 17th day, with a very trifling sore, which I never after dressed; and to this day he enjoys good health.

LXXXIII. But



LXXXIII. But to be thoroughly convinced, that the state of suppuration is the only time to attempt a re-union of divided parts; and to prove, in the clearest manner, why this operation did not succeed, in the many repeated trials made of it, as well to demonstrate my claim to this discovery, in the most convincing manner, I tried the following experiment, which, I hope, will not be deemed a cruel, or a wanton one.

Obs. 58. In February 1760, Catherine Cronen, a poor woman, from near Killmaloc, presented herself to our hospital, then in its infancy, with a terrible cancered breast, with strong adhesions to the adjacent parts, which I extirpated, in the presence of a good many of the faculty. I stuffed the cavity of the sore with soft, dry lint, every where, but in the lower part of the breast, where I reserved a piece of the skin, which I pressed to the bare ribs; and in that state kept it, by some loose, unformed lint outside, for my future inspection, without taking any notice of this proceeding to any present. When suppuration was every where else established, I observed here the corpus

F f      adiposum

adiposum melted down: the skin thin, discolored, and discharging a bloody ichor; and was, in fine, cut out.

LXXXIV. The flap operation being thus experimentally proved, and all the labyrinths of nature, to oppose this end, unravelled, I began most attentively to consider the different manner of operating, with the apparatus and bandaging, in order to render this operation less tedious and painful, and more universal, than that described by Verduin, Garengoet, and Heister. Those of Ravaton, Vermale, and La Faye, for amputating the thigh, are certainly painful, and terrifying to the highest degree. Unhappily for mankind, our profession often --- indeed mostly --- obliges us, in order to be useful, to be cruel; but then, this should be as little so as possible, consistent with the patient's safety. But the means I made use of, to answer this end, and the operation, bandaging and cure, shall be described in the next chapter.

T O  
**JOHN NICHOLS, Esq;**  
**SURGEON GENERAL,**

*The New Method of Amputation is respectfully inscribed: Its Importance recommended to His Consideration; and its general Use, to His Countenance and Protection.*

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**C H A P. XVII.**

*Of the Method of performing the New Operation, on the Leg, with the bandaging and dressing.*

**LXXXV.** **I**N Verduin's method of amputation, the rule was, to cut away the fleshy parts, to the tendo achillis; and after sawing through the bone, if the flap was too big, it again suffered a second incision, as if human flesh was to be clipt, and pared, like cloath, or linen! To keep this flap united to the bare bone, he imagined a variety of straps, and machines, highly embarrassing to the operator, and painful to the sick! But having, in the last chapter, demonstrated,



that the attempting an union of these parts, at this time, was the true cause of this operation's failing of success; and willing to determine the precise quantity of flesh, necessary to be taken off, in the flap operation, I considered the whole as a new method; determined to follow no guide, but that of reason, and anatomy, as the poet has it---*Nullius addictus, jurare in verba magistri.*

LXXXVI. After measuring the circumference of the calves, of a variety of legs, I found, upon a general standard of men, that fifteen inches might be found as a medium; the diameter of which (supposing it a complete circle) would be, according to Euclid, about  $5\frac{1}{4}$  inches, which appeared to me necessary to be preserved, below the amputated part, in order to form a flap sufficient to cover the stump. But as this great length of flesh would make the operation practicable but in a few cases, and, of course, exclude it from that universal good, I hoped it capable of, I began to consider of some conciser means. After sawing some tibiae, at the usual place of amputation, and measuring the diameter of the two bones together, I conjectured,

jectured, that about  $3 + \frac{1}{2}$  inches, might be admitted as a general standard of adults. If then, said I, an oblique section be made of the skin and muscles, at about three inches, or, at most, three and an half, below the part to be amputated, and continued in a sloping direction, till it reaches the bone, at the place of excision; by a circular incision, of the remainder of the flesh and skin, at this part, we shall preserve flap enough to cover the ends of the bones. By this means, said I, surgeons will be enabled to perform this operation, in every case where amputation becomes necessary; and it will be then found as expeditious as the method of the double incision, and attended with no more pain.

LXXXVII. After trial on a body, I found my flap a little short, on account of the thickness of the gasterocnemii muscles; but upon repeating my experiment on another body, and having first carefully drawn back as much skin as I could, I found a flap of  $3 + \frac{1}{2}$  inches would answer exactly, allowing for the melting down of the corpus adiposum, and cellular substance of the muscles, by suppuration, as lessening considerably the bulk of  
flesh,

flesh, though not the length of the flap. This rule should not be deemed infallible; because, where the limb is extenuated, a less quantity of skin will suffice to cover the extremities of the bones, than where the parts are turgid and full. I have since found that, besides the previous drawing up of the skin, if, in the circular tour, care is taken to save some skin in the anterior part of the leg, which is easily done, by drawing it back, during the incision, a flap of three inches will certainly answer. Though I have performed this operation three times successfully, in the course of eight months, and never measured the quantity of flesh, I intended to preserve, but with my eye; however, in a week after each operation, I was curious enough to measure the particular flaps. The first, I found, measured  $3 + \frac{1}{2}$  inches without, from the extremity of the flap, to the place of the circular incision; and  $2 + \frac{1}{4}$  from the internal edge of the flap to the bone; and this flap was found sufficient to cover the extremity of the stump, tho' a good sized leg; and that the circumference of it measured 14 inches. In the second case, the flap measured, from without,



out, three inches; and, internally, not quite two. This woman's leg was smaller than the first patient's, but both bones were rather larger, and much more firm. The periphery of this stump was twelve inches. In the third instance, the leg was burnt so high up, that no greater flap could be allowed, than two inches and one fourth; and, from within, it measured  $1 + \frac{1}{2}$  inches; and yet this stump was also completely covered with a good cushion of flesh and skin. The limb was greatly extenuated, and the circumference of the stump was not quite ten inches. In about eight months after her cure, this girl was seized with a malignant small-pox, and again admitted into our hospital, where she died. I made a skeleton of the body, and found, at the extremity of the stump, the diameter of the two bones, together, was  $2 + \frac{1}{2}$  inches. Upon the whole, then, I conjecture, that the difference between 3, and  $3 + \frac{1}{2}$  inches of a flap, will take in most legs; *i. e.* in adults, that it should be seldom under 3, nor ever exceed  $3 + \frac{1}{2}$  inches.

LXXXVIII. These necessary details premised, where the necessity of taking off a leg

leg is manifest, if a man let the hair be shaved off, from the knee to where the limb is to be taken off, which will save the patient a good deal of trouble in the dressings. The skin should then be drawn up pretty tight; and let a small band, moderately rolled up, and sewed from its outside folds, to the centre of an open roller, of about two inches broad, and a yard long, be placed in the ham, over the artery; and with the open one, going round the knee, let it be thus firmly secured. If one side of the open band is perforated, so as to make it a kind of uniting band, it will roll smoother. Then with Petit's, or the common tourniquet, let the artery be sufficiently compressed. I have operated with both; and do, on this occasion, prefer the common one; because, by its uniform pressure round the limb, less blood is lost, than in the other way. The difference, nevertheless, is not of so much consequence, as to give one an absolute preference to the other: the choice therefore may be safely left to the option of the surgeon. The patient should be placed on a chair, or low table; for choice, I would prefer a table, of about two feet high,

high, as the leg must have some degree of elevation. All the apparatus being properly disposed, which consist of a straight edged knife, with the blade as long as that of the common cateline, and pointed at its extremity, the common amputating knife, saw, and a few needles, armed with flat threads, and waxed, of different sizes.

---Let the leg be elevated, about a foot higher, than in an horizontal posture, and with a strong tape, of about an inch broad, let it be bound round, pretty firm, at the intended place of excision; and if, at this time, he lies in a reclining posture, the raising the leg will be the more easy.

LXXXIX. Mark, with a pen, the traces where you are to commence your incision, which should be, in adults, *at least*, three inches from where the bone is to be sawed.

---Then, with the straight incision knife, make an oblique section from this point to near, or to, the bone, ending at your tape: then with this same, or the common amputating knife, let the circular incision of the remainder of the flesh be expeditiously performed. To do this first part of the operation with greater ease to

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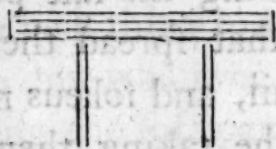


yourself, and advantage to the patient, you must be careful, if the left leg be the part diseased, to place yourself between his legs; and, if the right, to be outside the limb. The reason of these situations is very obvious: for you cannot, with the right hand, command an exact sight, or commence your operation, dexterously, but in these postures. This done, apply the split cloath, the two tails of which should cross over the tibia, and with the single one draw back the flap. Though some operators do not approve of the split cloath, in the common method, yet here it is essentially necessary: for this purpose, the tape should be first removed. Any little undivided flesh, may be now seperated by the cateline; the periosteum divided round about, and scraped upwards, agreeable to the advice of professor Monroe, and the ligamentum interosseum divided. The next thing to be done, is to saw the bones; but whatever be your position, in dividing the soft parts, you must be always between the legs, to cut away the bones. As soon as you have marked the traces of the saw on the tibia, run it along both bones, very light and nimble; and

and continue this manœuvre till the bones are divided. By this means, the teeth of the saw will not be entangled in the bones, nor you often obstructed in your motion; but the divided bones will be smooth, and the operation expeditious.

XC. The limb being taken off, the tourniquet must be relaxed; and the tibialis anticus, posticus, and interosseus arteries, carefully taken up. Where the flesh was thin, and not very firm, I have more than once, made a ligature round the bone, in which the artery was included. But if you use, instead of the ligature of the vessels, the agaric, or lycoperdon, which, I think, may be safely depended on, in the leg, and fore arm, you must be careful, that the fungus does firmly adhere to the vessels, before you dress up the stump; as also, that it be not removed during the last period. As for the vessels, that spread themselves on the gasterocnemii, and solæus muscles, in this operation, the taking them up becomes unnecessary. The blood being carefully mastered, which you will know by relaxing the tourniquet for some time, and no blood's spurting out, you are then to

dress the stump thus. Let the tibia be covered with a pledgit of dry lint, and the rest of the stump with soft lint, loose, and strewed with fine flour. In the thigh and arm, besides the future, I generally apply some lycoperdon to the extremities of the principal vessels; the same may be also done in the present case, if the ligature has been used. I would particularly recommend it to the space between the tibia and fibula; because it sometimes happens, that the interosseous artery shrinks between the bones; and tho' no appearance of an hæmorrhagy, at present happens, yet in a few hours it may return. The possibility of this accident, justifies the precaution. The flap is likewise to be dressed with soft, loose lint, and a cloath cut in form of a double T, and covered with adhesive plaister, is to cover the dressings. Its figure is thus:



The long one is to surround the stump, above the amputated part; whilst the tails, by crossing the flap, press it against the stump, and make all the dressings the  
more



more compact. This done, an hog's bladder moistened, and notched, is to enclose the stump; but, previous to this, I apply an handful of lint between the outside of the flap and the bladder: press this last to the stump; and the notches covering each other, above, make the whole dressings smooth, and the pressure soft, and such as is best calculated to prevent an hæmorrhagy. I know some have objected to the use of a bladder, in the common operation, that it may conceal an hæmorrhagy; yet, I must declare, that in the case of Kennelly (Obs. 42.) tho' the bladder was exactly used, as here directed, yet was the bleeding speedily perceived. Let a cross of Malta compress, moistened, cover the bladder; and then with a band, of between eight and nine yards long, and near three inches broad, rolled up to two heads, secure your dressings thus:

XCI. After removing the tourniquet, and other bands, used antecedent to the operation, I apply an handful of soft lint to the ham, which in the circumvolutions of the band here, greatly restrains the violence of the blood; for as this is the most troublesome and alarming symptom,

tom, and the most reproachful to the surgeon, I apprehend all these precautions justifiable. With one of the heads of your band, make three circulars, above the knee, moderately tight; then with the same, descend, and make two or three turns, below the knee, rather smooth than tight; and then mount obliquely, till you get above the knee, and here make a circular turn. Let the other head of the band go straight down from the posterior and inferior part of the thigh, over the flap, and above the knee anteriorly, which will become here secured by a circular turn, of the other head, over it. Let the other head again cross the stump and flap, from the inside of the thigh, and ascend at its outside above the knee; and here be again secured, by a fresh circular turn of the other head. Cross over the stump again, between these folds, so as to form, on the flap, a kind of star, of six points; and this fold becomes also secure, by a new turn of the other----Let the remainder, of both bands, be then disposed of round the thigh, at pleasure, or cut off. I have here rejected the long compresses; and studying rather simplicity and firmness,

ness, than too embarrassing an apparatus, have found the above dressing a more neat one, and better adapted to this operation, than any other.

XCII. The stump being dressed, let the patient be laid on his bed, and a pillow put under the thigh, so as to raise that part. As for a person's pressing with his hand against the stump, as generally recommended, I never used it, even when I operated in the common way; it appearing to me, rather to heat and stimulate the parts, than restrain an hæmorrhagy. Let the patient be kept to a proper diet; but, in this point, it is impossible to fix any criterion: for regard must ETERNALLY be had to the patient's usual manner of living; what being high diet to one, might alone be sufficient to sink another into the bowels of the earth. And on this single point, I am convinced, the success of many a cure chiefly depends. In general, young people, of plethoric habits, should be kept low; those advanced in years, or whose constitutions are otherwise impaired, should live freer. Some bleed on the commencement of the fever: this I am unfond of, except the fever



fever is high, or the subject full of blood; because without a fever, there can be no suppuration, of course, no tendency to recovery. In general, the first opening of the sore should not be for four or five days, according to the season, or symptoms. This should be done, by first softening the dressings in warm water, and removing only as much of the lint as comes off loose and easy. Let the whole part be then covered with pledgits, armed with the common digestive, and secured by the double T plaister, with the compress and bandage already described. The flap, and the stump, at every dressing, are to be regarded as distinct sores, and separately dressed. If the discharge is small, it may be promoted by stuping the stump with sponges, pressed out of very hot water; by the common digestive, and the like. If abundant, it may be lessened by dossils of lint, wet in brandy, or tincture of myrrh, or by dry lint alone, which is an excellent absorbent: the bark, in substance, will also greatly restrain it: often, a pill or two of calomel. In general, an abundant suppuration, will promote a speedy coalition; whereas, when slow, it will be more tedious.

tedious. Of this my three first patients were a sufficient proof. In the first, about the eighth day, the discharge was very large, so as to pour out above two spoonfuls of a milky pus, besides what the dressings contained, which continued to the twelfth day; when I turned the naked flap against the bare stump, and the fourteenth day the union was complete. In the second, the suppuration was more moderate, and the union was not complete in four days. The third patient had the intire limb and side paralytic: the stump never digested cleverly: the flap and stump were attempted to be united the twelfth day; and yet a complete coalition was not affected till the twenty-eighth; notwithstanding the use of warming stupes, and poultices, and some doses of calomel, to prevent a reabsorption of the pus. But the firm union of this flap, silenced every objection, that could possibly be made to this operation.

XCIH. About the twelfth day then, that is, when inflammation is intirely passed, and suppuration effectually established, the bare flap may be turned up against the naked stump, and so be se-

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cured

cured by plaister, compression, and bandage. Instead of the bandage already described, I have, on this occasion, used the following, which I have not seen any reason since to alter. It is composed of a strip of strong cloath, to go round the knee; and to the centre of this, is fixed another, which crossing, from under the ham, the stump is secured to the circular, above the knee, by means of four or five pieces of tape, attached to this last. The sore should not be opened for, at least, two days after this; and the dressings taken off with great caution. I often bathed this part, very hot; and though the flap should, in part, separate, yet must it again and again be returned, until the parts firmly unite. The little sore, which the flap does not cover, should be dressed with lint and brandy. Soon after the union of the flap and stump, I have seen the former, sometimes, inflame; but a relaxing stupe, and a poultice of flummery, soon removes this. But I never met with any instance of an abscess's forming in any part of the flap. At every dressing of the remaining little sore, of the flesh, the stump may be bathed in  
bran



bran and water hot, which will greatly accelerate healing. Though after fifteen or sixteen days the cure may be finished, by any common nurse-tender, yet do the parts remain tender for some days after. I was for a time at a loss to account for this, till by the dissection of one of my patients, who died in many months after this operation, of a malignant small-pox, I found it was occasioned by the extremities of the bones not being completely healed; so that, what I then thought a disadvantage to this operation, appears now to be one of its greatest excellencies: namely, that the bones should be fairly covered, by a firm periosteum, which at the same time accounted for this phenomenon.

improve circulation, was to secure health, and it is sufficient to cover the extremities of the bones. The great projection of these last, particularly in amputations of the thigh, and the length of time the extremities were exposed, after the operation, to become sore and raw, afforded a very melancholy prospect to the patient. Venereal amputation, though it was

C H A P. XVIII.

*Of the Methods of performing the New Operation in the Thigh, Arm, and Fore Arm.*

P R E S E N T E D

With great RESPECT and ESTEEM,

T O

EDWARD VILLIERS, *Esq;*

Of KILPEACON,

*And Representative in Parliament for the  
Borough of KILMALLOC.*

XCIV. **T**HE great point in view, in the different attempts to improve amputation, was, to secure flesh, and skin, sufficient to cover the extremities of the bones. The great projection of these last, particularly in amputations of the thigh; and the length of time the bone took to cicatrise; ever after extremely tender, and apt, upon every occasion, to become sore and raw, afforded a very melancholy prospect to the patient! Verduin's amputation, though it was

was attended with no success in the leg, yet a variety of improvements have been proposed, to make it successful in the thigh. In 1739, Messrs Ravaton and Vermale, gave the detail of their different methods of performing the flap operation in the thigh, which M. Le Dran, in his *Observations of Surgery*, has preserved. M. La Faye has proposed another method of performing this operation on the thigh, which is to be met with in the *Memoirs of the Academy*. But all these different manners of operating, are extremely cruel, and look much better on paper, than human flesh. Besides, they knew not the necessity of making the flaps, and stump, distinct fores. Without then detaining our readers with tedious descriptions, of what we must afterwards condemn, we shall describe the most eligible, the most expeditious, and, we think, the least exceptionable method of performing this operation.

XCV. To attempt this operation, by preserving a flap of flesh, in the posterior and inferior part of the thigh, must leave so large a flesh wound, and so great a quantity of muscular flesh bare, as to require



quire a very great length of time, to bring on a firm union of the divided parts: besides, the fever, and great discharge from so large a surface, may alone well endanger the patient's life. For precisely the same reasons, we reject the other methods. After a variety of trials, I concluded, that a flap of flesh and skin, preserved in the anterior part of the thigh, must answer our most sanguine expectations. For the quantity of flesh here, is not much: the skin, corpus adiposum and rectus muscle, being only interested in the incision: of consequence, the wound not considerable, and the flap not required very large. A patient dying in our hospital, I, on the body, attempted to determine the quantity of flap, necessary to be preserved, in this manner. The circumference of the thigh, at four inches, from the inferior part of the rotula, measured eighteen inches. Here I drew up the flesh, and bound it by a small band. I then began a flap incision on the rotula, which I brought up to the circular band, and here sawed through the bone, having first cut through all the intervening flesh. The preserved flap, measured three inches

inches externally; and two and an half, from the circular incision of the flesh, to its internal extremity. The diameter of the femur, in its longest axis, or nearly from side to side, was exactly an inch and one tenth; and yet this flap, besides completely covering the bone, extended an half inch beyond it!

XCVI. By this plain and simple experiment, it appears, that the flap operation, in the thigh, by making your incision in its anterior part, becomes less complex, less painful, and even more expeditious in its cure, than the same operation in the leg. And yet how embarrassing and tedious the cure, after this operation, in the common way! After determining on the precise place, on which the limb is to be taken off, care must be taken to have the blood-vessels mastered in the operation, either by Petit's, or the common tourniquet, as in the usual manner: then let the flesh and skin be tightly drawn up, from the knee, and so secured above the place of election, by a circular tape, or band. Mr. Gooch, a modern writer, proposes a kind of thick circular cushion, to serve instead of this band, to direct the knife exactly

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exactly in the circular tour. In my opinion, a thick tape will answer this purpose every bit as well, as this operation is mostly, exactly even; and that the cushion rather hides the direction of the knife from the eye. With a straight knife, such as has been described in taking off the leg, commence your flap incision, at about three inches, more anteriorly, than where the bone is to be sawed through, supposing an adult, and so in proportion to the age, and size of the limb. Let this incision be continued in an oblique direction, till you reach the bone, at the circular tape: then, with the same, or a common amputating knife, make your circular sweep, commencing from the side of the flap, and directly to the bone; observing here, as in the leg, to place yourself outside the body, in taking off the right thigh; and between the legs, in removing the left. But then, there is no necessity here, as in the leg, of change of place, in sawing the bone; because, as it is but one, wherever you place yourself to cut off the soft parts, there you may stay to finish the operation.

XCVII.M.



XCVII. M. Louis is of opinion, that to prevent the protrusion of the bone, in amputated thighs, the complete section of the soft parts, should be performed at once; and before the bone is sawed thro', the tape that secures the flesh, at the place of excision, should be unbound, to give the divided muscles a greater power of retraction. Agreeable to such just reasoning, I think, that as soon as the circular incision is completed, the tape should be removed, and the split cloath cross the divided parts, in order to draw up the skin and muscles, the single tail, covering the flap; and as soon as the periosteum is separated, &c. let the bone be sawed. The femoral artery should be taken up with a large convex needle, well threaded, the threads flat and waxed; and in doing this operation, it is not necessary, to include with the artery, a large parcel of muscular flesh. In fact, a small portion with the cellular substance of the adjoining muscles, will form for it a soft cushion; and the swelling of them, will sufficiently compress the artery, as well as secure it from any abrasion of the ligature. But in making this ligature, the surgeon must

be very careful to pierce the parts, at least, a quarter of an inch above the orifice of this vessel: by not making this ligature sufficiently profound, the vessel slips from the noose, and you are obliged to make a second, with greater pain to the patient. Let the threads be cut short; and besides this ligature, let some agaric, or lycoperdon, be applied; and any other considerable branches, of vessels, may be taken up, or stopt, by the above funguses. Let the surface of the sore be covered with loose, unformed lint, strewed with flour, and the flap laid over this dressing, covered by a double T plaister; an handful of lint outside this, gently pressed against the flap, by an hog's bladder, moistened and notched, at its orifice; and the whole covered by a cross of Malta compress. Let soft lint, tow, or a linen compress, cover the direction of the artery; and secure all these dressings on, by the following band.

XCVIII. Let this band be about three inches broad, and twelve yards long, rolled up in two even heads. Apply a large handful of loose lint, or soft tow, over the femoral artery, near the groin; and  
after

after making a couple of circulars about this part, moderately tight, so as to break, in some measure, the force of the circulating fluid, let the bands cross round the body. Fix a piece of strong tape, about an inch, or more, broad, and a yard long, along the inside of the amputated thigh, one end of which is to be secured to the band that went round the body, and the other to hang loose over the stump: let a similar piece of tape be in like manner fixed to the outside of the thigh. Then, with one of the heads of your bandage, make three or four circulars, round the thigh, over these tapes, gently descending, and with the other head, cross directly, over the anterior part of the thigh, and stump, and ascend posteriorly: a couple of circulars of the other head, gently ascending, will secure it smooth and firm. Descend again over the inside of the thigh, cross the stump, and mount with your first band, outside the thigh; and here another circular or two, makes this second turn firm. Between the anterior and lateral turns of the band, you must bring down your roller, cross the stump, and ascend in the opposite direction; and here



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again, a couple of circulars of the other roller, will make all firm: between the posterior and lateral parts of the band, you must make a fourth turn, over the stump, and secure it, by another circular; and finish both heads, by circulars, or spiral turns, round the stump; or, if too long, they may be cut off. Though the stump be now apparently well bound, yet, by reason of the form of the thigh, the bands may be apt to loosen, or even drop off: to prevent this, let the tapes already mentioned, be turned up at their loose extremities; the inside one, to cross over the inside of the thigh, and, as it ascends, to be here and there secured, by pins, to the circulars, and to part of the band that went round the body; and in like manner, the outside tape. By this means, the circular turns, which only could loosen, will be smoothly retained in their different places, and the whole bandaging, convenient, firm, and even. The excellent and judicious remarks of professor Monroe, on the disadvantages of too straight a bandage, on crossing the stump, can be here of no force: he demonstrated, that this force lay on the bare bones:

bones: here it is manifest, that the flap, and dressings, only, sustain it. So that what was rather prejudicial, than useful, in the common operation, becomes here manifestly necessary. I am, nevertheless, clear, that the bandaging had best be but moderately tight, as the swelling of the stump, will soon make them sufficiently distended.

XCIX. In winter, the stump should not be opened before the fifth, or even sixth day; nor in summer, sooner than the fourth: the bone should be dressed with dry lint, or lint wet in brandy; and the soft parts, with the common digestive; taking care, to remove no more of the old dressings, than what are loose. When suppuration is well established, the stump and flap, may be dressed with dry lint, as the soft digestives, at this time, are apt to encourage exuberant, or proud flesh --- If, nevertheless, such should rise on the flap, it may be, now and then, sprinkled with red præcipitate; but the surgeon need never be uneasy, at attempting an union of the flap and stump, at such time; as I have done it, without the least inconvenience to the patient. About the twelfth  
or

or thirteenth day, and not sooner, should the flap and stump be brought into perfect union: before this, they are to be treated as distinct sores; and preserved in such situation, by a bandage something like what has been recommended for the leg. But whereas that was secured above the knee; to make this a fix'd point, the straps must go round the body, and the body of the band lie on the anterior part of the stump, in order gently to bring the flap and stump into an exact union. This first dressing is not to be opened for three days; and every other rule recommended in the leg, is here exactly to be followed. If, in the suppurative state, the sore should have an unusual degree of pain and sensibility, the parts may be often bathed in milk and water; the sick let blood, and even opium alone, or mix'd with digestives, may be successfully applied to the parts.

To



*To perform the New Operation in the Arm.*

C. In amputating the thigh, we have, for very obvious reasons, chose to take the flap from its anterior part, as being a less considerable wound, having less of substance, and, of course, sooner covering the bone, the principal object of all. For precisely the same reasons, in taking off the arm, the flap of flesh should be taken from its posterior part, as being less fleshy, and nearer the bone: here a flap of flesh, from two and half, to three inches, will be certainly sufficient to cover the bone. The bandaging here, must be pretty near the same, as in the thigh; though, as the arm is pretty near cylindrical, some may think it unnecessary to cross the band round the body, as it might be apt to heat and oppress the patient. But if this should be thought proper to be dispenced with, I am clear, that a flat tape should, from the neck, hang down each side of the arm, the bandaging to be performed over it, and the two extremities of it, turned back, pinned to the circulars, and so firmly secured to the neck-band. The union should be attempted about the eleventh day.

## 256. *Of the New Operation on the Fore Arm.*

### *How to perform it in the Fore Arm.*

CI. To take off the fore arm, in our method, we must look for the flap, in its external part, as having less to cut thro'; but above all, as by this means you avoid bringing in that monstrous groupe of tendons, which cover the inside of the fore arm: here, from an inch and an half, to two inches, will be, undoubtedly, sufficient to cover the bones; but then, in the incision, you must comprehend the full breadth of the flesh and skin, on the back of the fore arm-----The dressings and bandaging are most easily comprehended, from what has been already said; and about the tenth day, you may attempt an union of parts.

CHAP.

C H A P. XIX.

*Of the Superior Advantages of the New Operation to that now used.*

As a particular Mark of E S T E E M,

F O R H I S

*long, steady, and inflexible* A T T E N T I O N,

To the I N T E R E S T of the

L I M E R I C I N F I R M A R Y,

I N S C R I B E D T O T H E

Rev. D E A N E H O A R E, M. A.

A N D

T R E A S U R E R to said C H A R I T Y.

CII. **N**OTWITHSTANDING the repeated endeavors of the first surgeons of Europe, for near a century, to perfection the flap operation, at length happily established; many strong objections have been made from time to time to its general establishment, which we shall here impartially consider.

K k

Obj. 1.



Obj. 1. "There are but few cases, where this operation is admissible in; as it requires so considerable a quantity of sound flesh, below the part to be amputated, that the disorder must be confined to the foot or ankle."

CIII. In the methods heretofore described, a great part (indeed the intire) of the leg, was required to be sound; but amongst many irregularities attending this method, this was the most considerable. For they never determined the precise quantity of flap to be preserved: their directions were, that if, after the operation, more flesh had been reserved, than was necessary to cover the stump, it was to be pared off; as if human flesh was to be cut and hacked, *ad libitum*! whereas, in our method, the part, necessary to be preserved, is precisely determined; and, in general, in amputations of the leg, as much sound flesh as this, is left exposed, even in the common method of amputating. For the general rule is, to amputate, at least, two inches above the mortified part; and, indeed, it is much oftener three, than two. But let us, for argument sake, suppose that a mortified leg,

leg, which necessarily requires amputation, is found at but two inches from the usual place of amputation. Here it may be observed, that to perform this operation in my way, instead of his leg, the patient must be amputated in the thigh; as the quantity of sound flesh, required by me, is here wanting. But to this I answer, that a leg, even under these predicaments, may still be taken off, in the flap way. I would not hesitate a moment, to make part of the oblique section an inch, or an inch and an half (which is the utmost wanting) into the lesed parts. Since as this is a distinct fore, discutient and active stupes may, after the first dressing, be applied to this part, to restore a circulation. But let us grant, that this piece of flap is irrecoverable; and that the *corpus adiposum* will here fairly melt away, still from a remarkable case, in Le Dran's Observations, Vol. 1. page 88, we find the skin, though apparently black and mortified, is still capable of recovering itself, and uniting to, and firmly covering sores. But it may again be asserted, that the attempt of preserving some of the lesed parts, in this operation, may be attended with dangerous

consequences to the sick, by reabsorbing part of this malignant matter. It has, however, been so clearly proved, through the course of this work, that if the bounds of the mortification be circumscribed, that is to say, that from being universal it becomes local, or fixt to a certain part; that all intercourse absolutely ceases between the sound and unsound parts at this time, and that no danger can arise to the patient, by delaying the operation; but the greatest, by a too hasty use of the knife. That the skin can be recovered, tho' seemingly in a state of dissolution----And by the bye we know the same thing often happens to more noble parts (as La Motte amputated an arm, in the mortified parts, successfully, *Traite Complete de Chirurgie*, Tom. 3. Obs. 321.) we shall be convinced, that it is not only safe, but sound practice, in similar cases, to cut into the mortified parts; and that in all cases, that necessarily require amputation, *the flap method may and should ever be preferred to the common one.*

Obj. 2. " Amongst the many advantages, expected from Verduin's method of amputation, that of the ligature of the blood-vessels becoming unnecessary, was  
not



not the least; yet experience has proved, and it is now a material objection to it, that the hæmorrhagy alone has often proved fatal to the patient."

CIV. As it became a received opinion of most surgeons, that wounds of this kind, brought into contact, immediately united by inosculation, or without suppuration; so taking up the artery was judged unnecessary, as opposing this union----No wonder then, if fatal hæmorrhagies frequently intervened, and brought on death! But as we have fully proved the falsity of this assertion, by shewing, that inflammation and suppuration are absolutely necessary to bring on a reunion of divided parts, it follows, that taking up the vessels are highly proper----Nay so little right have we to dread bleeding, in our new method, that I am quite clear, that we are much more exposed to it, in the common one. For besides the common dressings of soft lint to the stump, the flap is also dressed the same way; and the flap returned, and pressed against the stump, becomes the softest, and firmest pressure, against the blood-vessels; and of course makes the  
taking

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taking up of the muscular arteries quite useless.

Obj. 3. "The flap may become united to the stump, before the stitches are ready to fall off, which must cause troublesome abscesses, or endanger the separation of the coalesced parts."

CV. As I had maturely considered every possible obstacle, that might oppose, or render the success of the *New Operation* in the least doubtful; this appeared to me a very formidable one: however, experience, the most unerring guide, has fully cleared up this affair. For Kenelly, my first patient, had a stitch taken out the 15th, and another the 17th, or the second and fourth day, from the union, without the least affecting this union. In fact, I took it for granted, that the ligatures had been all removed, before the flap was turned up; but yet, on the above days, something white, or like thick pus, presented itself to the orifice of the sore, which, on removing with great ease, proved to be the ligatures of two vessels, that had dropped out, and which nature, without the least pain or trouble, pushed forward. By this it appears, that the ligature

ture of the vessels can, in no shape, obstruct the cure, after this operation; but if, instead of the ligature (suppose in the case of the leg or fore-arm, for instance) we use the agaric, or lycoperdon; it is demonstrable, it may more safely be depended on, than after the usual manner of operating. Nay, I have very little doubt, but soft lint and flour may be sufficient to stop hæmorrhagies in this way, as the dressed flap, and the nature of the bandages and dressings concur to give that soft firm pressure, so necessary to oppose the passage of the blood in divided arteries.

Obj. 4. "More blood is certainly lost in the flap operation, than by amputating in the common manner."

CVI. Tho', undoubtedly, more blood appears to be lost, in our manner of operating, than in the general method of practice; yet a little reflection will quickly shew us, that this is rather an advantage to the operation. For we can only compress the poplites artery: all the blood beyond that is mostly lost, even in the common way. The addition of the flap, it is true, preserves a greater length of these vessels, and of course makes the  
the



264 *Of the Utilities of the New Operation.*

the appearance of a larger hæmorrhagy; but it is, nevertheless, demonstrable, that the patient suffers no greater loss of blood, in the mean, by this method, than by the common operation: the difference consisting only in this, that, in the second method, the blood remains in the mutilated part, which in the other falls on the floor. But so far is this from being prejudicial to, or weakening the patient, that it becomes manifestly useful by giving to the blood a greater freedom of circulation, and making the inflammatory state of the flap and stump more gradual and less painful: just as we daily observe of common wounds, the freer they bleed on being received, the kinder and speedier they heal.

CVII. Having thus impartially examined all the supposed defects of this operation, and fully answered all possible objections to it; let us now, in the same manner, demonstrate its many superior advantages to the common one, in order to its effectual establishment. In the common method, besides the present danger, incident to all capital operations, many others are to be dreaded. First, the large surface to heal must make a tedious fore; and this,

this, tho' ever so gently dressed, must create pain, and keep up the fever, which in vitiated habits may be attended with fatal consequences: at best nature must be weakened by the suppuration. 2dly, the fore long exposed often affects the bone, and so makes exfoliation necessary; and the tediousness of this process what surgeon does not know? 3dly, The extremity of the bone is long skinning over, and this is so thin and fine, that the least cold pierces it, especially frosty weather, which often makes it break out afresh. 4thly, The bone often projects considerably beyond the flesh, particularly in amputations of the thigh, whereby a second and third section have been found necessary: add to this, that in all these cases, a too abundant suppuration is to be dreaded; and this the more in hospitals, or close places, where a number of sick are confined to a small space.

CVIII. On the contrary, in this new operation, the sore becomes superficial in about ten or twelve days, from which little pain can be feared; and the ends of the bones are so well covered, by a cushion of flesh, that no exfoliation can be dreaded,

much less subsequent pains in frosty weather. In the common method, a disorder even of the foot, makes amputation near the knee necessary, because here the wooden leg rests; but in this, you may cut much lower down, as the extremity of the stump may rest in the hollow of an artificial leg, which the cushion of flesh enables it to do; and the remains of the limb will have the power of bending and extending, as freely as ever. But nothing can prove so clearly the advantages of this method, as the single reflection, that the very extremity of the bone is fairly covered with a firm periosteum! As this is a circumstance of the greatest consequence to the public, I shall transcribe the attested case, which has been two years ago printed, and the original signed by three physicians, and two surgeons.

Obs. 59. Alice Blachall, whose case is described, Obs. 51, in some months after her cure, was seized with a confluent small-pox, and again admitted into our hospital, where she died the 8th day. Curious to know how the flap and stump were united, I embraced this extremely disagreeable opportunity, doubting if ever  
I should



I should have a second; and, in the presence of a good many gentlemen, went through a minute enquiry. On handling the stump, I found the flap moved about with ease; but on a closer inspection, the parts most contiguous to the stump, adhered firmly to it. I made an incision about an inch and an half above the stump, and cut the parts carefully away; but the inside of the flap adhered very strongly to the surface of the bones, and principally at their edges, where the separation was with difficulty performed.

The inside of the flap was remarkably smooth, and in it were formed two cavities, for the two bones to lodge in; which cavities, tho very smooth, had a much greater degree of solidity and firmness than the rest of this part. The extremities of both bones were very smooth and even, and fairly covered with a periosteum, which I separated, and which was *thicker than what generally covers the surface of bones.*

CIX. And to remove every remains of doubt, and to point out to surgeons in the clearest manner, how much it is the interest---at least of the sick, to submit to this new manner of amputation, I shall

just transcribe the examination of two different patients, which I made at my house, in the presence of some curious gentlemen.

Obs. 60. Quinlon, whose case is recited in Obs. 52, I examined in January 1762, as well as Kennelly, the first man, who submitted to the flap operation. The circumference of Quinlon's stump measured 12<sup>1</sup>/<sub>2</sub> inches. Besides the skin preserved in the operation, the cicatrice measured, in its longest axis, or from side to side, 3<sup>1</sup>/<sub>2</sub> inches. Its diameter, or from the fore to the back of the leg, was 2 inches; and a small scab covered the centre of the bone. He had, in cold weather, a violent pain in the bone, insomuch that he could scarce feel heat in the stump, at this time, tho' over a fire, and a drop often came from the bone. On the contrary, Kennelly, tho' past fifty, and of a puny constitution, never felt any pain in the bone, from the first day. The union of the flap made the fore superficial; so that the only sign of a cicatrice was in the anterior and lateral parts of the tibia. The whole length of this fore was four inches and an half; but this so narrow and superficial, as not to be, in some places, two lines, nor in its broad-

broadest, did it exceed half an inch; and as this was merely flesh, without the interposition of bone, the cure was speedily effected. Such was the event of this examination; and such the difference between two men, the one a strong healthy man of 35, the other a puny sickly man, and advanced in years: the first examined 16 months from the operation, and the other six weeks!

Having thus *endeavoured*, with great precision, to class under proper heads, the different species of gangrene: to distinguish the curable from the irremediable disorders of this class: exactly to ascertain the precise time in which amputation should be undertaken; and in fine presented to the public a new and more successful method of performing this operation than any ever yet imagined; I shall conclude this work in the words of Horace.

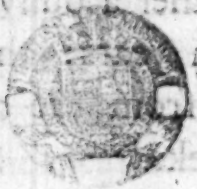
*Libera per vacuum posui vestigia princeps:  
Non aliena meo pressi pede.*

F I N I S.

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broach, did it exceed half an inch, and  
as this was merely flesh, without the in-  
terposition of bone, the cure was speedily  
effected. Such was the event of this ex-  
periment; and such the difference between  
two men, the one a strong healthy man  
of 30, the other a very sickly man, and  
advanced in years, in this operation, and the  
other six weeks.



It is very thus answered, with great  
pneumony, to clots under proper heat, the  
distinction of gangrene, to distin-  
guish the curable from the irretrievable  
disorders of this class: exactly to ascertain  
the precise time in which amputation  
should be undertaken, and in the pro-  
cedure to the public a new and more suc-  
cessful method of performing this opera-  
tion than any ever yet imagined, I shall  
conclude this work in the words of Ho-

lars, "I have performed this operation  
many times, and with success."

THE END OF THE FIRST VOLUME.

LONDON, Printed by J. B. B. 1794.



A N  
APPENDIX.

C O N T A I N I N G

*Proposals for the* ADVANCEMENT of  
SURGERY in IRELAND;

*With a retrospective View of the* ANTIENT  
STATE of P H Y S I C amongst us.

P R E S E N T E D

With Great DEFERENCE and high ESTEEM to

LUCIUS O'BRIEN, Esq;

REPRESENTATIVE in PARLIAMENT for the

BOROUGH of E N N I S.

THOUGH it be universally ad-  
mitted, that the profession of sur-  
gery is of the greatest utility to  
the state in time of war, and to the pub-  
lic at all times; and as scarce a man from  
the prince to the peasant, but must fall  
under the hands of surgery, at some pe-  
riod or other of his life, it must necessari-  
ly

ly follow, that the inspection into a profession, on the abilities of the members of which the lives of thousands daily depend, is an object of *universal* concern.

It cannot, nevertheless, but afford matter of great concern to a contemplative mind, to observe, upon how strange a footing, this most useful profession stands in this kingdom, compared to that of other states. In France the advancement of surgery has been a particular object of government, for above a century past, besides the different professorships founded, and pensions bestowed on particular men of merit; persons pretending to eminence in any particular branch of the healing art were sure of public countenance. From this attention of the state, surgery began to flourish in a remarkable degree there; and M. Voltaire places the advancement of our profession, as one of the memorable transactions of Lewis XIV. This object, so far from being lost sight of, has been carried to the highest length, in the present reign. Besides the foundation of a Royal Academy of Surgery, under the King's immediate protection, the great advantages of which are universally acknowledged; not only are pensions bestowed,





stowed, but patents of nobility are frequently conferred on surgeons of eminence, and every other motive expanded that can rouse latent merit. And certainly with the soundest policy, and highest justice! For if the Roman republic decreed a civic crown, to the man who saved the life of even a single soldier, how powerful should not the incentives be, to stimulate men to excel in a profession, so remarkably connected with the good of mankind? What an additional spirit do not the soldier and sailor acquire, to perform their duty, when they know they have men of humanity and capacity to pour balm into their bleeding wounds?

But whilst great care is taken, to cherish merit, and keep up a generous emulation amongst the different members of this profession, particular attention is paid, to prevent any one's intruding himself into it, without proper qualifications. To practise surgery in Paris, after going thro' a painful course of studies, and being also Master of Arts in some university, the candidate must pass thro' a severe course of examinations at St. Cosmes, before the first men of the profession. Besides proving himself a good anatomist, well versed

in the disorders of surgery, and their cure, he must perform all the operations of surgery on a body. Then it is, and not before, that he gets a faculty, becomes a registered surgeon, and is intitled to all the privileges and emoluments of it. From this body the state is supplied with able professors for the navy and army, and the kingdom in general well served. In Germany they are also registered, and in Bohemia certain stipends are allowed them, for their attendance on the poor, in their different districts.

Tho' great attention has always been paid to the preservation of property amongst us, infomuch that a man must be a cynic indeed, who complains of the fewness of our laws, on this head: tho' most kind of frauds and villanies have adequate punishments annexed to them; and that thro' the interposition of that truly patriotic body, the *Dublin Society*, arts and manufactures flourish; yet we cannot but with singular concern reflect, that for a very long period no laws have passed, relative to that great article *Health*, if we except a regulation made about thirty years ago, to the dispensing medicines in Dublin; and which two sessions past became general to  
the

the kingdom.----On the contrary, it would seem, as if the most ignorant impostor had as much right to trade in human flesh, as the first surgeon; for (if my informations are right) a common empyric can enforce payment for attendance in surgery, even tho' he should be very far from perfecting the cure! In fact, as we have no laws made, no criterion fixed on, to determine what the necessary qualifications of a surgeon are, or of a man, who may with impunity make use of fire and sword against his Majesty's subjects, the law supposes every man who assumes the character, properly qualified.

However such has not always been the case in this kingdom; for we find our GREAT ANCESTORS very early in their attention to the health of the subject. Ireland was the only country in Europe, in which the promoting the fine arts seemed interwoven with the texture of the state. peaceable and undisturbed possessors of a noble country, for very many centuries, nothing seemed to escape their observations, in which the general good of the subject was interested! Their physical regulations alone would do honor to the most



polite nation at this day in Europe.\* Coeval with the foundation of the Irish monarchy were the learned professions made hereditary in certain families, in the different parts of the kingdom: their persons were deemed sacred: their possessions inviolate! They were exempt from all sorts of imposts; and certain portions of land were every where allotted them, for an honorable maintenance. We find Amergin, a son of Milesius, appointed by his brothers Chief Judge of Ireland, on their very landing, as if arts and arms went hand in hand with them! The learned O'Flagherty has preserved some sketch of his works; and O'Cormoc has celebrated him, in an ancient Irish poem on our principal writers, which Mr. O'Flagherty has thus rendered into Latin verse:

Primus Amerginus genu-candidus, author Jernæ;

Historicus, judex lege, poeta, sophus.

Succeeding monarchs enlarged these privileges. In the reign of Tighermas, † A. M. 2816, men of learning were allowed

\* Consult Usher, Keating, Ward, Lynch, or Gratianus Lucius, O'Flagherty, Welsh, Ware, Harris, O'Connor's Dissertations, M'Geoghegan, &c.

† Keating *ferus seafa ar Eirion, cead leabber*, 7c.

ed the same number of colors in their cloaths, with princes of the blood. A. M. 3075 Aildergoidh \* directed physicians to wear gold rings; and in a very few years after, the great Ollamh Fodlha reformed, revived, and confined for ever the profession of physic to certain families, through the kingdom; and that no interruption should be given to the learned in their different studies, by a perpetual and immutable law, in all intestine wars, irruptions, &c. their persons and possessions were every where undisturbed; and as the learned Dr. Keating, and all our annalists agree, thus continued, even for a long time after the English invasion. Under such flourishing circumstances then, we are not to wonder, if they were unrivalled in arts, as well as invincible in arms! That the learning of our antient Druids, like the language, spread over Britain and France; and that after their conversion to Christianity, their piety, hospitality and learning should be the admiration and wonder of all Europe!---We, however, find this attention to the health of the subject observed in the most polished states of antiquity, though not in so eminent a de-

\* Ibid.

a degree, as amongst us. For instance, amongst the Ægyptians and Greeks, the profession of physic was hereditary in certain families, and public stipends were allowed to them by the state; and the great Hippocrates was himself the 18th descendant from Æsculapius.---But to return to the hereditary physicians of Ireland: of these some assumed the surname from their profession, as the Macleas, or son of the physician: others from their great success, as the O'Hickies, or healers, from Ike a balsam. The O'Canavans and O'Callinans, Lfind, were the physicians of the county of Gallway:\* the Nealans and Hickies to the renowned Dalgafs, or militia of Thomond, as the Mac Clanchy's were the judges, and the Bruodins the historians.\* The O'Fergus's were professors of eminence in the county of Mayo; the O'Duigenans in Breffny, now part of the county of Leitrim; the O'Shiels in Tirconnell, the O'Dunleavies and O'Cassidy's in Fermanagh. A branch of the O'Callinan's settled in the county of Corke; and were in such repute, that to this day, to describe the situation of an incurable, it

\* O'Flagherty Ogygia, p. 360.

\* Bruodinus propugnaculum, lib. 5. cap. 4.



it is a common expression, "*Ni leighis fiadh*  
"*O Callenan fein e*---Even O'Callinan would  
"not cure him." By such wise institutions, it was, that our Ancestors attended to the health of the subject. The sick and wounded every where knew to whom they were to apply for relief: no empirics or impostors were suffered to cheat them of life and wealth. But even here, to guard as much, as human reason could possibly foresee, against monopoly, tho' the professions of physic and surgery were hereditary in families, yet they never descended in a regular succession: the most distinguished in the tribe were the candidates, and of these the most eminent was called to the succession. By this wholesome law, a generous emulation constantly subsisted between the learned professions. That surgery in particular flourished in a most remarkable manner, amongst so learned and warlike a nation, cannot be doubted; and a most striking proof of this, our antient annals furnish us with even prior to the Christian æra. The case has been preserved in our antient annals, and from them handed to us, by the learned Dr. Keating, in his history. "Connor, King of Ulster, about the year of the world

3950, had his skull violently fractured by a famous hero of Connaught. When his life was quite despaired of, his first surgeon by name Feighnin Feathig, proposed an operation, as the only chance left for his recovery, provided his nobles would consent, and protect him from the consequences. They agree: the king recovers; but Feighnin charges him, as he loves his life, to avoid all intemperance, and violent passion to which he was addicted, for fear of inflaming the brain, and bursting it from its enclosure, 'till the parts became firm." Trepannation or its consequences could scarce be better pointed out by the surgeon, than they are here described by the historian! This prince in a considerable time after, inconsiderately falling into a most furious passion, the cicatrice burst open, the brain was in part discharged, and he died soon after. Thus we see an operation, at this day allowed to be the nicest in surgery, was familiar to our surgeons 1800 years ago, when this profession, even amongst the Greeks, and in the Roman republic, then in its greatest splendor, was in a very abject state. And the very old, tho' well known adage, "*Ni thog fiodh leagha na blfenn e*---The physicians

“ cians of the royal militia would not raise  
“ him,” proves what estimation our professors were held in, in the most remote times; especially when it is known, that this most formidable body, renowned for many ages, became totally suppressed in the third century. Such interesting anecdotes preserved, do honor to the historian, as well as mark the different traces of knowledge: thus Mezeray records a successful trial of extracting a stone in the kidney from a convict, in the reign of Francis I. So Voltaire notes the general improvement of surgery in the times of Louis XIV. An account, similar to this, of Dr. Keating, is recorded in the Second Volume of the Edinburgh Essays.

That few of our antient writings in surgery or physic, should be preserved, is not surprizing: indeed upon reflection it will appear astonishing, if the Irish were not the most devoted nation in the world to their antiquity and learning, how it was possible to preserve any annals at all! a cruel, relentless, and almost uninterrupted Danish war of above 200 years, succeeded by an English one of 400; in which every monument of literature and antiquity, that could be come at, shared the



unhappy fate of their country; whilst hirelings, *profaning the sacred name of history*, have from time to time during this period, attempted to obtrude the most glaring, the most illiberal invectives, for historical truths, will fully answer the cavillings of critics on this head. Even our medical regulations, for which, amongst other things, the Ægyptians and Greeks were so justly revered, have only served as new matter of triumph to these prejudiced writers: thus De Linda, “*medicos ibi, hæreditas non doctrina facit.*” The same may be observed in Stanhurst, Campion, &c! nay the learned Cambden appears, in many places, too replete with this same spirit: thus on the present subject he observes, “*Principes medicorum Hiberniæ sunt Callinani, qui instinctu potius quam doctrina medici evadunt!*” This partiality which reflects on the man and the historian, has given rise to the following epigram:

*Perlustras Anglos oculis cambdene duobus;  
Uno oculo Scotos: cæcus Hibernigenas.*

In fact nothing can be more certain than physic amongst other learned sciences being carefully cultivated by our Ancestors. All the proofs that our situation  
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can afford, and that in such circumstances can be expected, loudly proclaim this fact. First, we find clear and expressive technical terms for all the disorders of physic and surgery in our language; many of which, most modern nations borrow from the Greek and Latin writers. I shall just give two instances which prove our knowledge of disorders, as well as acquaintance with the antient Greeks----A cataract we call Dortaghe from Deor a drop, and Suil or Huil an eye. How much more significant is this than the Hypochuma of the Greeks, and the Suffusio or Cataracta of the Latins? A rupture Muim-shekine, from Muim a tumor, and Shekine the groin: who cannot here see the Bubonecele of the Greeks? 2dly, We find the knowledge of simples here perfectly understood; and this knowledge is in some degree preserved by the common people to this day, by whom many cures are performed by simples; and from some of whom I have learned certain operations in simples, unnoticed by writers. 3dly, The early acquaintance of our Ancestors with the most eminent Greek and Roman medical writers, prove, that intense study and observations, not *succession* formed our physicians.

The earliest edition of Hippocrates that appeared in Europe, is a translation from the Arabic, printed at Venice in 1493: that from the original tongue was not published for half a century after; and yet, besides other curious works, I have by me (thanks to my learned and worthy friend and antiquarian Charles O'Connor, Esq; of the county of Roscommon) at this time, a translation of Hippocrates into Irish, wrote at a much earlier period, than the Venetian Edition. It is wrote on thick vellum in Folio; and has the evident marks of a most remote antiquity. The text is in Latin in Irish capitals, elegantly penned: each aphorism being literally rendered into Irish, with copious explanatory notes in the same language; in which the medicines necessary to remove the different defects are minutely detailed. In some places, the beginning of the aphorism only is preserved in the text; but then the intire is minutely translated before the notes. I have compared the text with different translations; and tho' they all agree in the mean, yet is it different in the stile from any. In some places are manifest grecisms: for instance, we find Pharmacia often substituted for Purgatio, &c.

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the succession of the aphorisms do not exactly follow as in other translations; nor is the whole divided into books. On the whole, the appearance of the MS. the obsolescence of the abbreviations, in many places with great difficulty made out; and the small attention paid to literary disquisitions (at least in this language) for some centuries past, make it demonstrable, that this translation had been made before, or very soon after the English invasion. Especially if we consider that the present MS. how antique soever it appears, is evidently but a copy; for the elegance of the penning, and the text, in some places ungrammatical, in many ill spelt, prove this.

It was not till about the annihilation of the Grecian empire, that the Greek language became revived in Europe: the dispersion of the Literati of Greece made their writings more familiar. It was to the Arabians we owed the earliest acquaintance with Galen and Hippocrates; and yet it very remarkable, that this language at all times has been known to our Literati. For instance; St. Cormoc, King and Archbishop of Munster, in the 9th century, understood it well, as his writings testify.

From

From this short sketch of our ancient physick (I hope no unacceptable present to the curious) it must appear to demonstration, that all the sciences have been cultivated amongst us with the highest splendor, and particularly physick. And yet how different is this account from the character which Mr. \* Hume in his history, is pleased to give of the Irish nation! This elegant and learned writer, forgetful of what he owes himself as a gentleman and scholar, and the public as an historian, is not ashamed, with the greatest coolness, and with a most *unbridled* licentiousness, to represent the whole Irish nation, as absorbed in ignorance and barbarity, and totally destitute of every human virtue! Had this been really the case, some regards to decency and politeness: to so many noble English families, whose veins are replete with Irish blood: to the present nobility and gentry of Ireland, antient as well as modern, all blended together as one people; and to a sister nation ever renowned for bravery and hospitality----should have prevailed upon him at least to soften his tints, and throw into shades some parts of this unnatural representation. But if this whole account

\* See the life of Henry II. &c.

account be as remote from truth, as light is from darkness, what can the public think of the *candor* of this gentleman?

To see a groveling writer, or a man of midling parts, run into invective and misrepresentation, is not surprizing; but when we behold men of exalted genius's let prejudice and partiality preponderate philosophy and justice; and the dignity of the historian sink into the acrimony of the pamphleteer---When such a man as Mr. Hume attempts, from the character he has gained as a writer, to stamp unmerited infamy upon a whole nation; one cannot help concluding, that the exploded doctrines of Dempster, &c. are again reviving.

But from this transient animadversion on a writer justifiable from his character *only*, to our subject. If, *Salus populi, lex suprema*, be an uncontroverted maxim of state, in the political sense of the word, sure in its literal sense, it must carry still greater weight. Indeed the daily injuries committed by ignorant quacks call loudly for reformation. A slight sore, a fixt pain, rheumatic, nay paraletic complaints, are causes sufficient for these gentry, to salivate. But this is not the least injury: the mercury



ry is poured on in such profuse quantities, as frequently to destroy---in general to impoverish the constitution, and make the sick of little use after. Nay so violent are their common purges, that the prudence only of the apothecary, is what preserves the patient. And what else can be expected, where wretches who can scarce write, seem to amuse themselves with the most drastic drugs, with impunity? Nay, there are not wanting *instances* in a more exalted state, where men of greater character than abilities have absolutely destroyed the sick, thro' the grossest ignorance!

To prevent then such fatal mistakes for the future, and to preserve the vigor of our commonalty, already greatly degenerated: the following proposals for the advancement of our surgery, are submitted to public consideration.

I. That a decent and convenient edifice be erected in the capital, and three professorships founded: one for anatomy, a second for the disorders of surgery and midwifry, and the third for the operations of surgery; and that each do give a course of lectures in succession every Winter free to all people.

II. That

II. That an exact list be taken through the kingdom of all reputable surgeons, with their names and places of abode: that no other presume to practise surgery, much less perform capital operations; and that all young surgeons for the time to come be interdicted practice, 'till they shall procure a faculty of their abilities, signed by the above professors, or their successors.

III. In order to procure this, the candidate or candidates must by written notice apply for a public examination, and this to be published before the exhibition which should be from twelve to three o'clock. That this hold for three days: the first intirely for anatomy, the second for disorders of surgery, and if a candidate for midwifry, for this also; and the third to finish, with performing all the operations of surgery on a body, with their apparatus and bandaging. When a proper faculty, signed by the professors, is given to the candidate, to which if some little honor were annexed, it might add greater stimulus to the young students.

IV. That this course be attended with no kind of expence to the candidate; and that it be free to all Irishmen *only*, with-

out distinction; genius being unconfined to principle or party, and such narrow considerations being worthier a little republic of Ragusa, than the representatives of a powerful kingdom. And that the number be by no means limited, because the more surgeons of eminence, the better will the public be served.

V. That a printed list be published annually of the registered surgeons and men-midwives of the kingdom, with their places of abode, signed by the professors; by which means the public will, *as heretofore*, know where to apply for certain relief.

————— *Fungar vice cotis, acutum  
reddere quæ ferrum valet, exfors ipsa secandi.*

HOR.

T H E E N D.





